

# **Structural Insulated Panel System Technical Installation Manual**



Structural Insulated Panel System for use in residential dwellings and light commercial buildings in New Zealand to meet NZBC 50 year durability requirement.



# Technical Installation Manual Scope and Statement

This Technical Installation Manual sets the details for installing the MagRoc Structural Insulated Panel System for Residential and Light Commercial buildings.

Always check you have the latest version of this manual. Updates or version number is available at [www.magroc.co.nz](http://www.magroc.co.nz) or email [enquiry@magroc.co.nz](mailto:enquiry@magroc.co.nz)

This should be used in conjunction with MagRoc's BPQP, BEAL's Appraisal Certification, and MagRoc Details which are all external documents available from MagRoc.

Any changes in design or construction from the information contained herein must be confirmed in writing to a MagRoc representative or relevant engineer and signed off by a MagRoc representative / staff member.

All action for remedial work to rectify problems with non-conforming panels / components must follow the steps outlaid in the MagRoc BPQP (external document available from MagRoc) and confirmed in writing with MagRoc.

MagRoc panels in conjunction with BEAL Appraisal Certification meet the following Building Regulations:

- **Clause B1 STRUCTURE**

Performance B1.3.1 and B1.3.3. The MagRoc SIP meets the requirements for loads arising from self weight, earthquake, wind, impact and creep [ i.e. B1.3.3 (a), (f), (h), (j) and (q)].

- **Clause B2 DURABILITY**

Performance B2.3.1 (a), at least 50 years, and B2.3.1 (c), 5 years. The MagRoc SIP construction system and protective coating system meets these requirements.

- **Clause E2 EXTERNAL MOISTURE**

Performance E2.3.2. The MagRoc SIP meets this requirement.

- **Clause F2 HAZARDOUS BUILDING MATERIALS**

Performance F2.3.1. The MagRoc SIP meets this requirement and will not present a health hazard to people.

- **Clause H1 ENERGY EFFICIENCY**

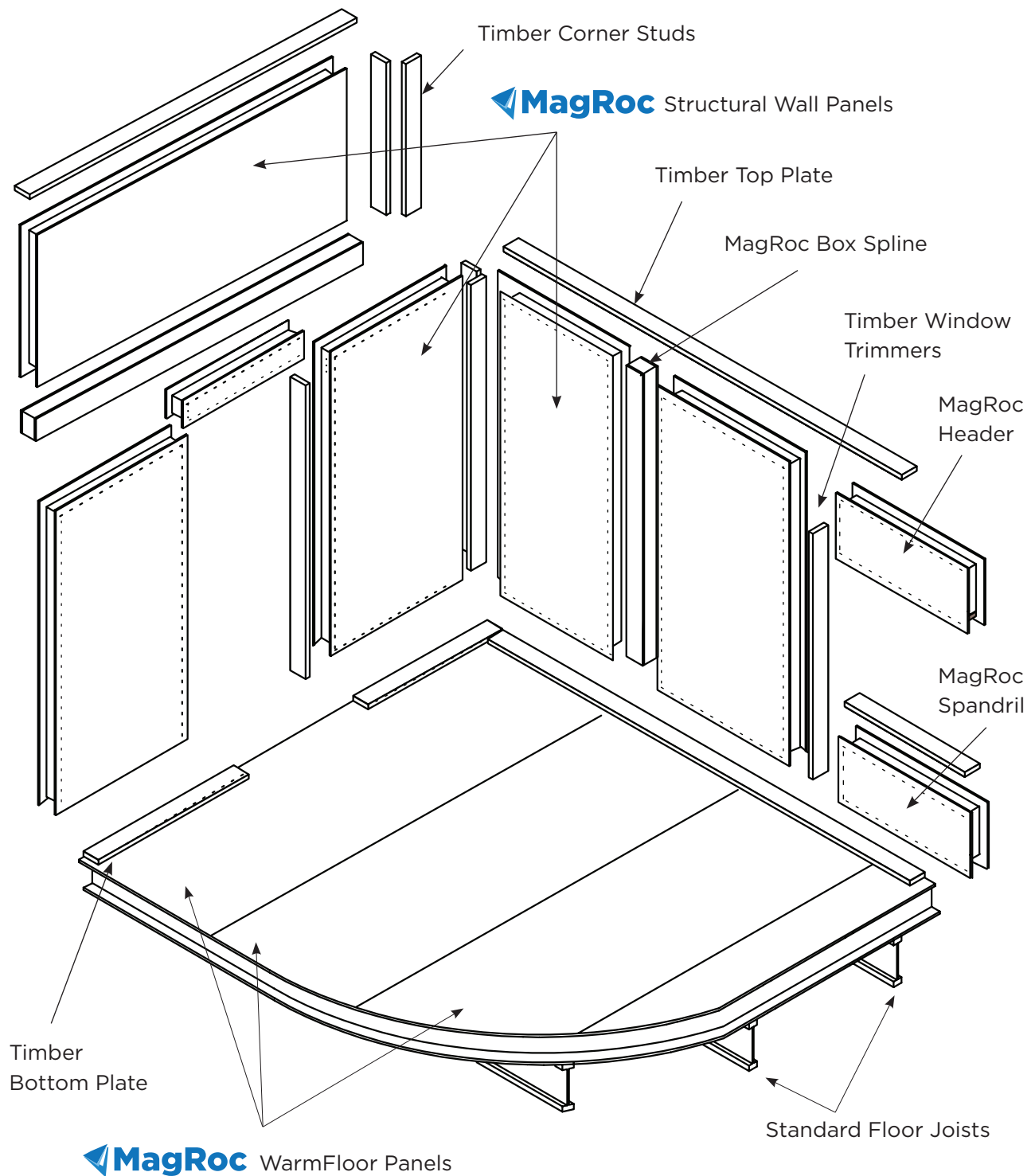
Performance H1.3.1. The MagRoc SIP when installed according to the manufacturer's instructions will contribute to a building meeting the performance requirements of clause H1.

The MAGROC SIP has been appraised as an Alternative Solution in terms of New Zealand Building Code Compliance. **BEAL Appraisal number C1130, more info @ [www.beal.co.nz](http://www.beal.co.nz)**





# Structural Insulated Panel System



# Table of Contents

<b>Section 1.0</b>	<b>Introduction of the MagRoc Structural Insulated Panel System</b>	<b>5</b>
1.1	General Introduction	5
1.2	MagRoc system	6
1.3	Design requirements	7
1.3.1	Pricing Schedule	7
1.4	MagRoc System Products	7
1.4.1	MagRoc SIP (Structural Insulated Panel)	7
1.4.2	MagRoc Internal walls	8
1.4.3	MagRoc Floor Panels	8
1.4.4	MagRoc Roof Panels	8
1.5	MagRoc SIP supply options	9
1.5.1	Stock size panels	9
1.5.2	Ready-to-assemble panels	9
<b>Section 2.0</b>	<b>Safe Work Practices</b>	<b>10</b>
2.1	General guidelines	10
2.2	Personal Protective Gear Guidelines	11
<b>Section 3.0</b>	<b>Engineering &amp; Design Scope</b>	<b>12</b>
3.1	Design Consideration	12
3.2	Engineering Specification	13
3.2.1	Bracing	13
3.2.2	Axial Loading	14
3.2.3	Face Loading (Short Term)	14
3.2.4	Lintel Spans	15
3.3	Floor and Roof Spans	17
3.3.1	Floor Spans (for 1.5 kPa Live Load)	17
3.3.2	Roof Spans (for 1.8 kPa Wind Loading - Very High)	17
3.3.3	Floor Live Loading - Q (kPa)	18
3.3.4	Roof Wind Loading - ULS (kPa)	19
<b>Section 4.0</b>	<b>Tools Fasteners and Materials</b>	<b>20</b>
4.1	Standard Tools for SIP Construction	20
4.2	Specific Tools for SIP Construction	22
4.3	Fasteners	23
4.3.1	Panel face screws	23
4.3.2	Bottom Plate Fastenings / Corner plate fastening	23
4.3.3	Roof / Flooring Screws	24

4.4	<b>Adhesives / Sealants</b>	24
4.4.1	Spray Foam and Spray Foam Cleaner	24
4.4.2	Building Sealant	24
4.4.3	Flashing Tape	25
4.4.4	Building Wrap	25
4.4.5	Construction Adhesive	25
<b>Section 5.0</b>	<b>Site delivery, handling and storage</b>	26
5.1	Site access	26
5.2	Delivery	26
5.3	Handling	27
5.4	Storage	28
5.5	Documentation regarding delivery	28
<b>Section 6.0</b>	<b>SIP Panel Connections</b>	29
6.1	Panel to Panel joints	29
6.1.1	Box Spline	29
6.1.2	Timber Spline	29
6.1.3	Control Joints	30
<b>Section 7.0</b>	<b>Job Start and Field Preparation</b>	32
7.1	Documentation	32
<b>Section 8.0</b>	<b>Panel Installation Details</b>	33
8.1	Installing Basics	33
8.1.1	Applying Adhesive and / or Foam	34
8.1.2	Cutting Panels / Rebating EPS	35
8.2	Marking Out	36
8.3	Installing Bottom Plates	37
8.4	Panel Installation	42
8.4.1	First Panel	42
8.4.2	Next Panels	43
8.4.3	Corner Panel Installation	44
8.4.4	Spline Connections	49
8.4.5	Headers and Spandrels	50
8.5	Top Plate	51
8.6	2 Storeys / Stacking Walls / Mid Floor Detail	53

<b>Section 9.0</b>	<b>Panel Penetrations / Openings</b>	<b>57</b>
9.1	Window and Door openings	57
9.1.2	Rebated Window Details	59
9.1.3	Face Fixed Window Details	63
9.2	Exterior Penetrations	66
9.2.1	Exterior Pipe / Light Details	66
9.2.2	Meter Box Details	67
<b>Section 10.0</b>	<b>Roofs and Floors</b>	<b>69</b>
10.1	Roofs	69
10.1.1	Structural Roof SIP's (MagRoof)	69
10.1.2	MagRoc WarmRoof100 Panels	76
10.2	Floors	76
10.2.1	Structural Floor SIP's (MagFloor)	76
10.2.2	MagRoc WarmFloor100 Panels	77
<b>Section 11.0</b>	<b>Exterior Finish &amp; Claddings</b>	<b>78</b>
11.1	Paint Finish	78
11.2	Texture Coating	78
11.3	Cladding Over Cavity	78
<b>Section 12.0</b>	<b>Interior Finish</b>	<b>79</b>
<b>Section 13.0</b>	<b>Disposal</b>	<b>80</b>
<b>Appendices</b>		<b>81</b>
Appendix A	Pricing Request	
Appendix B	Approved Components	
Appendix C	Plaster and Paint Finish Specification	

<b>Table of Figures</b>	<b>6</b>
Figure 1.0	3D Cross section of a MagRoc SIP's
Figure 2.0	3D Cross section of a Box Spline
Figure 2.1	Vertical diagram of a Box Spline
Figure 3.0	Vertical Diagram of a Timber Spline

Figure 4.0	Installation Direction Diagram	33
Figure 5.0	Spraying Foam on to the Panel	34
Figure 6.0	Spraying Foam on to the Bottom Plate	34
Figure 7.0	Marking Out Bottom Plates	36
Figure 8.0	Installing Mag Bottom Plates	37
Figure 9.0	Installing Timber Bottom Plates	38
Figure 10.0	MagRoc 'Typical' Floor Detail - OverHang with Direct Cladding on Concrete Slab	39
Figure 11.0	MagRoc 'Typical' Floor Detail - Bearing on the Slab with Cavity	40
Figure 12.0	MagRoc 'Typical' Floor Detail - OverHang with Direct Cladding on Suspended Floor	41
Figure 13.0	Installing First Panel	42
Figure 14.0	Installing Corner Panel	44
Figure 15.0	Installing Corner Panel 2	45
Figure 16.0	MagRoc 'Typical' External Corner	46
Figure 17.0	MagRoc 'Typical' Internal Corner	47
Figure 18.0	MagRoc 'Typical' Bracing Hold-Down Bracket Detail	48
Figure 19.0	Installing Spline Connections	49
Figure 20.0	Installing Headers	50
Figure 21.0	Installing the Top Plates	51
Figure 22.0	MagRoc 'Typical' Top Plate	52
Figure 23.0	Stacking Panels	53
Figure 24.0	MagRoc 'Typical' Mid Floor with Paint Finish	54
Figure 25.0	MagRoc 'Typical' Mid Floor with Direct Fix Cladding	55
Figure 26.0	MagRoc 'Typical' Mid Floor with Cladding on a Cavity System	56
Figure 27.0	MagRoc 'Typical' Rebated Window Sill	61
Figure 28.0	MagRoc 'Typical' Rebated Window Head	62
Figure 29.0	MagRoc 'Typical' Rebated Window Jamb	62
Figure 30.0	MagRoc 'Typical' Facefixed Window Sill	64
Figure 31.0	MagRoc 'Typical' Facefixed Window Head	65
Figure 32.0	MagRoc 'Typical' Facefixed Window Jam	65
Figure 33.0	Pipe Penetration	66
Figure 34.0	MagRoc 'Typical' Meter Box	68
Figure 35.0	MagRoc 'Typical' MagRoof base to Angled Soffit 90' - 65'	70
Figure 36.0	MagRoc 'Typical' MagRoof top to Angled Soffit 91' - 115'	71
Figure 37.0	MagRoc 'Typical' MagRoof Square Soffit	72
Figure 38.0	MagRoc 'Typical' Truss Roof Square Soffit	73
Figure 39.0	MagRoc 'Typical' WarmRoof with Truss Roof & Square Soffit	74
Figure 40.0	MagRoc 'Typical' Truss Roof with Lintel required & Square Soffit	75
Figure 41.0	MagRoc 'Typical' MagFloor Connection	76
Figure 42.0	MagRoc 'Typical' WarmFloor Connection	77

# 1.0 Introduction to the MagRoc Structural Insulated Panel System

This manual covers the common details of a MagRoc Structural Insulated Panel (SIP) System in residential and light commercial construction. It is a general guide and therefore specific details shown on the MagRoc SIP construction detailed drawings should be followed along with relevant building codes. This manual can be used for training and reference purposes and will form part of the periodic instruction courses run by MagRoc. Courses can be arranged by contacting your MagRoc representative or by emailing [enquire@magroc.co.nz](mailto:enquire@magroc.co.nz)

## “BUILDING NEW ZEALAND BETTER”

MagRoc takes this vision statement seriously. We are here to assist in the application of our product and to ensure the inherent values of the system are achieved and maintained. Please make sure you contact your MagRoc representative if you require any assistance with your project, from conception to completion. We offer trained site consultants that can work with you to guarantee your project is completed to the MagRoc specification.

### 1.1 General introduction

At MagRoc we have chosen to take a fresh look at the complete building structure. After several years of Canadian and New Zealand field installations and R&D, we have set standard design criteria based on multiple efficiencies.

The MagRoc SIP System represents a revolution in building technology. The easily assembled panels make it possible to erect houses and other buildings quickly and with minimal expense. By spreading the structural loads over the SIP system, much of the timber used in conventional framing is eliminated. In addition to reducing site labour and construction time, the panel technology is ideal for creating airtight, highly energy-efficient buildings.

The MagRoc SIP offers exceptional strength while providing options for the complete building envelope. It is suitable for both external and internal walls, as well as flooring and roofing, to achieve a complete SIP system. This does not mean it is necessary to use the complete system to gain benefits from it. It works equally as well in conjunction with traditional flooring and roofing, while still providing a superior building envelope.

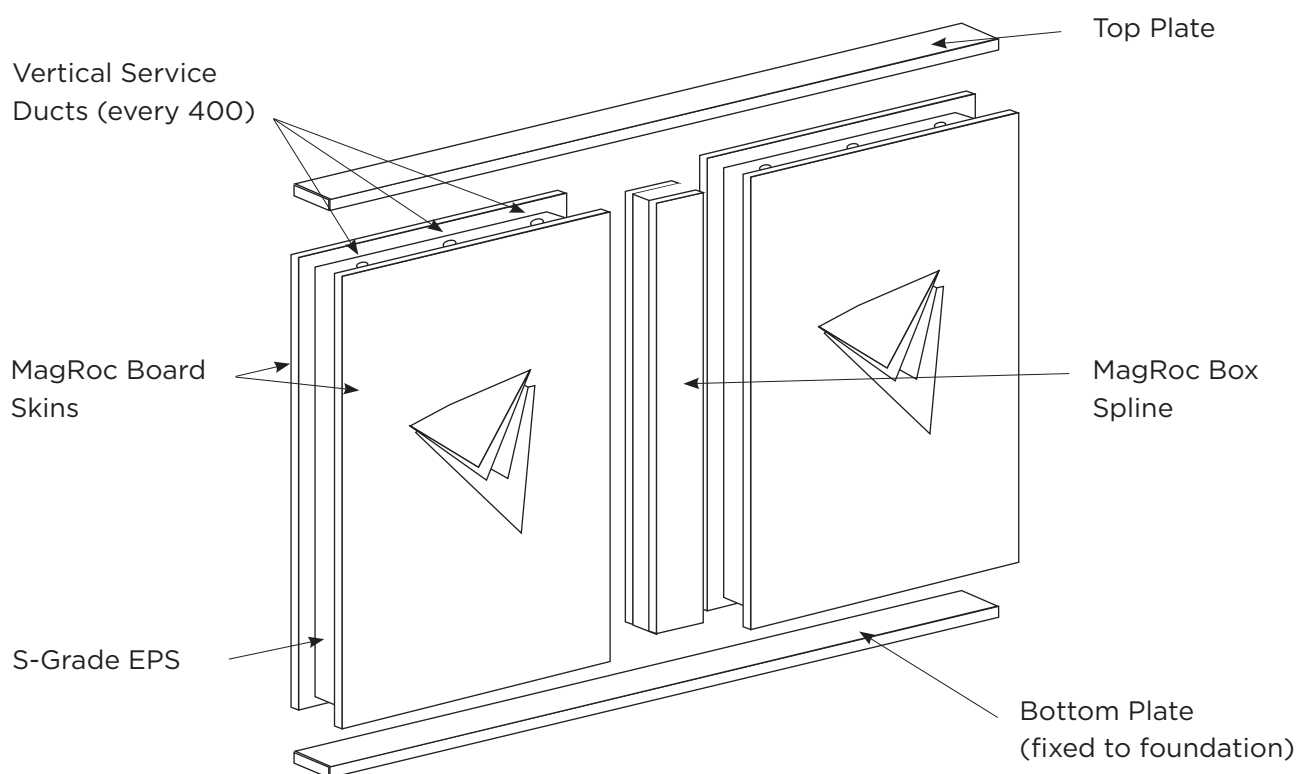
Often, the first question asked is, “Can we use your product in this application?” The answer is almost always “Yes”. There are times when traditional methods may be more cost effective for parts of the building such as complicated roofs or basic internal walls, and in these cases we will provide enough information so that you can make an informed decision.

In conventional timber frame NZ3604 construction headers and lintels are contained within the wall sections around windows and door openings. Along with flashings & drainage, these are the most problematic areas within the building envelope. The MagRoc SIP system aims to reduce risk in these areas



## 1.2 MagRoc System

MagRoc SIPs (Structural Insulated Panel System) comprise a composite panel of expanded polystyrene (EPS) insulation and skins of MagRoc Board (Magnesium oxide board). (Figure 1.0) MagRoc SIP's compares favourably in strength with conventional , (or normal), timber framed walls of comparable thickness. This strength comes from the composite nature of the panel and is likened to steel I-beams. The EPS insulation in the panels is continuous, keeping thermal bridging to an absolute minimum. This continuity of the insulation greatly improves the overall thermal performance of the building envelope. Carefully assembled and connected panels eliminate most of the air leakage typically associated with conventional frame construction saving on heating costs. Electrical wiring can be run thru the preformed vertical wiring chases in the EPS.



**Figure 1.0 3D Cross section of a MagRoc SIP's**

## 1.3 Design requirements

If required architectural and engineering drawings of a project are used by our draftsman to create shop drawings of the panels for a project. Successful planning involves identifying the location of panel joints and where structural members need to be located. This is a process that requires review by your design team. This review guarantees that the panels delivered to the job match your design intent and the engineering requirements. It is therefore very important the person responsible for signing off on the drawings is experienced with shop drawings and comfortable with the process.

This process can be expedited by making sure that the project drawings provided at the outset of the SIP drafting process contain all pertinent information for the project, including, but not limited to the following:

- Foundation plan with details and dimensions.
- Floor plans with dimensions.
- Elevations with floor to floor dimensions.
- Cross-sections showing dimensions.
- Window schedule with rough opening sizes and lintel and sill heights.
- Structural engineering design and calculations.

This information will ensure that the approved shop drawings contain all the correct elements prior to the panels being manufactured.

DESIGN, SHOP DRAWINGS, DRAFTING AND ENGINEERING SERVICES ARE AVAILABLE FROM MAGROC. ASK YOUR MAGROC REPRESENTATIVE TO PROVIDE YOU A QUOTE FOR THIS WORK.

### 1.3.1 Pricing Schedule

Refer to Appendix A for a pricing schedule request. This form is designed to allow the designer or builder to specify the areas required for pricing and the components required. Your quotation will refer to this document and will highlight additional component or panel options.

## 1.4 MagRoc System Products

### 1.4.1 MagRoc SIP (Structural Insulated Panel)

The MagRoc SIP panels are extremely versatile. They are sheathed with 12mm MagRoc each side and the thickness of the EPS is generally dictated by the width of the timber members chosen for the plates and trimmers. Nominal panel thickness's are therefore 165mm, 215mm, 265mm, and 315mm.

165mm	12mm MagRoc /141 EPS / 12mm MagRoc	Achieving R 3.8
215mm	12mm MagRoc /191 EPS / 12mm MagRoc	Achieving R 5.4
265mm	12mm MagRoc /241 EPS / 12mm MagRoc	Achieving R 6.7
315mm	12mm MagRoc /291 EPS / 12mm MagRoc	Achieving R 8.0

Sheet edges can be either tapered or square, depending on the required finish.

Tapered edged sheets are preferred to increase the water tightness of the SIP joint. The interior surface is simply plastered and finished with a standard stopping systems. Innumerable finishes can be applied to the exterior of the SIPs. Refer to section 'Exterior Finishes'. As the MagRoc panel absorbs so little water - even when fully immersed - it could be said anything more than 'painting' the external face is for aesthetics only.

For Roof panels (refer section 10) the common structural component is LVL or timber I-beams and therefore the EPS thickness is altered to suit the required size. Any skin thickness or total panel thickness can be manufactured for specific requirements. It is not unknown for roof panels to be 300mm thick. (R 8.0)

#### 1.4.2 MagRoc Internal walls

Internal wall panels are commonly manufactured at 114mm wide. This again is to accommodate standard timber framing, which is used for plates, and if needed, point load bearing. Standard sheet sizes are the same as MagRoc SIP's.

#### 1.4.3 MagRoc Floor Panels

##### **MagRoc MagFloor - Structural Integrated Panel & Joist System.**

A structural joist, whether I-beam, LVL joist, structural timber, formed steel joist, or other, is installed in the edge of the appropriate sized panel. Leaving half of it exposed for the connection of the next panel. The next panel slides over the exposed section of joist and the top and bottom edges of each panel are butted together then screw fixed to the joist. The result is a flush finish on both the top and bottom. It is recommended that the minimum thickness of the jointing member is 63mm to provide adequate fixing of both sheet edges.

##### **MagRoc WarmFloor100 - Overlay for standard floor framing**

This is commonly a 115mm thick panel screw fixed over standard floor framing. 115mm thickness allows standard 90 x 45 framing to be used for opening trimmers and boundary boards. The benefit of these floors is, superior strength, thermal insulation, and the waterproof nature of the board that allows for use in wet areas. Where falls are required, eg bathrooms, the panel can be reduced in thickness to allow for a plaster screed.

**NOTE: This flooring system requires a considerable engineering consideration because point loads can complicate their use.**

#### 1.4.4 MagRoc Roof Panels

There are two methods of roof construction using MagRoc SIP's. They use the same principle as the flooring options.

##### **MagRoc WarmRoof 100**

This is a 115mm panel screw fixed over truss, roof joist or purlins.

## **MagRoc MagRoof**

Same detail as Warm Floor 'Integrated Structural Panel & Joist System', but installed to the required fall. Most roof cladding systems are suitable for fixing over SIP panel roofs. Whether torch on fabric, tile and batten, or iron and purlin.

**NOTE:** The potential difficulties of Magfloor, noted are not replicated in the roof panels because point and wind loading are less.

## **1.5 MagRoc SIP supply options**

### **1.5.1 Stock size panels**

Stock size panels are 1200mm wide by 2440, 2745 or 3050mm long. (Refer to Section 5.0) These panels are cut and handled on site to the required layout. Windows and door openings are cut on site to the required height. An advantage of this system is that panels can be modified on site. Any variation in say, a concrete floor slab not being level, can be accommodated by modifying the bottom of the panel without affecting the window lintel heights.

### **1.5.2 Ready-to-assemble panels**

The MagRoc SIP System is available as an industry-leading ready-to-assemble building system that gives builders an additional competitive edge over traditional stick frame construction. The advantage to this system is that it has panel connection splines and structural lumber installed where possible. It does not eliminate the need for assembly in the field of panel components but may, include preformed window and door openings. Refer to 1.5 for drafting and engineering services, or contact your MagRoc representative.

- Ready-to-assemble Panels reduce construction time in the field.
- Improved efficiency in construction scheduling.
- Integrates all architectural and structural elements.
- Improve weather tightness accuracy performance
- Create an airtight building or home

## 2.0 Safe Work Practices

Safety is the responsibility of everyone! The following is to be used as a guide to safe work practices involving MagRoc SIP systems.

Under normal conditions of use, MagRoc SIP systems and board presents no known direct health hazard. Construction sites can contain multiple hazards and therefore it is required that all installers follow all legal requirements when working on site. Please refer to the Department of Labour, and OSH regulations for all relevant legislations. For more information visit [www.dol.govt.nz](http://www.dol.govt.nz).

MagRoc (NZ) Limited will provide basic training for the specific handling and installing of panels and accessories, if you arrange this prior to the job and/or delivery. It is then up to the installer to practice safe work procedures on the relevant construction site.

### 2.1 General guidelines

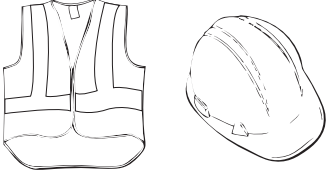


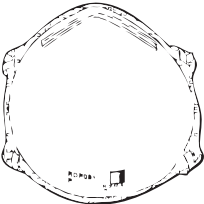
- Careful lifting techniques must be employed to minimize the risk of back injury. It is recommended a minimum of 2 people lift the SIP panels.
- Panels should always be picked up by the bottom sheet and as close to centre as possible.
- Lifting equipment is recommended for roofing panels. This is generally a Hiab, crane or extending forklift. If these are not available, ensure that adequate labour is on hand to assist.

MagRoc is an inert material with no VOC's or hazardous elements. Never the less, all cutting of the SIP panels and board should be carried out in a well ventilated area, or a vacuum assisted dust reducing attachment is used to reduce the inhalation of fine dust particles. Users should wear properly fitted, approved dust mask or respirator complying with AS/NZS 1715 and 1716 (e.g. P1 or P2) in accordance with applicable government regulations and manufacturer instructions.

- It is recommended gloves be worn while handling MagRoc Board as it tends to dry out your skin.
- Knives used for scoring and snapping should be sharp to operate effectively. Extreme care needs to be taken when using any cutting implements.
- Dust masks complying with AS/NZS 1715 and 1716 must be worn for all sanding of stopping compounds. For more information visit [www.dol.govt.nz](http://www.dol.govt.nz).

## 2.2 Personal Protective Gear guidelines

It is important to consult the Department of Labour for current PPE requirements but as a general rule we recommend the following at all times:

	High Vis clothing and relevant hard hat
	Safety glasses
	Steel capped shoes or boots.
	Approved dust mask or respirator complying with AS/NZS 1715 and 1716 (e.g. P1 or P2) for cutting.



## 3.0 Engineering & Design Scope

### 3.1 Design Considerations

Careful pre-planning will greatly simplify installation and procedure of SIP's construction. Pre-planning will speed up and economize the construction and also substantially reduce site waste. Contact your MagRoc representative or MagRoc preferred builder if you have questions or need additional information.

- Consider the standard MagRoc SIP dimensions when designing. This will minimize waste and speed up construction. Standard panel widths are 1200mm and a 5mm gap between sheets is required to achieve a watertight sealed joint. Remember to allow panel thickness when setting out corners. So set out the nominal panel size around the building at 1205mm.
- Consider electrical requirements. Panels are preformed with wire chases at nominal 400mm centers and drilling of plates and blockings needs to be done at the same time as panels are installed.
- Consider plumbing requirements. As in conventional framing, it is good trade practice to eliminate plumbing from external walls. This reduces thermal bridging when the exterior is compromised.
- Consider window and door opening positions. Although these can normally be cut anywhere, it is often better to start and finish panels either side of a door or large opening and then infill the spandrel and lintel with purpose cut panels. Refer Installation Sections 8 & 9.
- Consider roof design. By using SIP panels for roof you can create a sloping ceiling, which adds greatly to the spacial and architectural effect. Mono-pitch is a very simple roof design and can accommodate large overhangs and cantilevers. Gable end roofs also are relatively simple and economic. Composite I-beam and panel construction can accommodate quite large spans creating a large open effect. Hip roofs can become time consuming and complicated when setting out hips and valleys.

## 3.2 Engineering Specification

Magroc panels and systems have been tested for a range of structural applications. Test data has been analysed according to AS/NZS1170 part 0 in order to determine likely minimum capacities for each specific application. All calculated capacities are characteristic capacities and are to be applied along with a phi factor of  $\phi = 0.8$ .

This document applies to buildings compliant with 3604:2011. For any structure or part thereof that is beyond the scope of 3604, specific engineering design must be applied. This document is to be read in conjunction with the MagRoc SIP: Properties and Structural Capabilities manual. (This can be obtained by asking you MagRoc Rep)

### 3.2.1 Bracing

Bracing capacities for 2.4m high by 165mm thick wall panels. Bracing panels are to be a minimum of 0.8m in length and have screws at 50mm spacing within 250mm of panel corners and 150mm spacing elsewhere. For panels with a height (h) greater than 2.4m, bracing capacity is to be multiplied by a factor of  $2.4/h$ .

Bracing capacity for wall panels with bolted base plates (M12 bolts at max 800mm spacing with a minimum of two bolts per panel and a minimum end spacing of 200mm). Specific engineering design is required for bolting through baseplates greater than 140mm wide in order to account for flexure across the plate.

Bracing capacity for wall panels can be increased with the use of hold down brackets at panel ends where capacity is dependant on the level of hold-down provided.

Characteristic Capacity	Bolted Baseplates	Hold-Down Brackets
Panel total (kN)	9.0	20.5
Per panel Vn (kN/m) min 1.2m	3.75	8.5
Bracing units (BU/m) to timber	70	120
Bracing units (BU/m) to Concrete or SED	70	150

Load to be used for bracing purposes with Gib HandiBrac brackets or CPC80 for timber. A limit of 120 BU/m applies for fixing to a timber floor unless specific engineering design ensures that uplift forces can be resisted. For higher capacity bracket types specific engineering design is required.

### 3.2.2 Axial Loading

For specific axial loading figures please refer all questions back to your MagRoc representative who will put you in touch with a structural engineer. These must be detailed specifically for every job based on top plate and roofing design.

### 3.2.3 Face Loading (Short Term)

Face loading capacities for individual panels (1.2 m (w) x 165 mm (t)) without timber plates or studs. For floor and roof loading, magroc panels span between joists at a maximum of 1.2 m centres (see span tables sections 6.1- 6.4 for floor and roof spans). Face loading capacities apply to magroc panels with a thickness of 165 mm or greater. For significant long term face loading contact Magroc representative for further information. For loading conditions not covered by NZS 3604, specific engineering design is required.

Characteristic Capacity	2.4m Span	3m Span
Wn (kPa) (ULS)	6.5 (104 m/s)	5.0 (93 m/s)
Wn (kPa) (SLS - L/360)	2.0 (60 m/s)	1.5 (46 m/s)
Mn (kNm)	5.0	6.0

Characteristic Capacity	1.2m Span (point load on floors)
N (kN) Short Term	12.0
N (kN) Long Term	5.0
Mn (kNm)	5.0

### 3.2.4 Lintel spans

For 250 mm and 400 mm deep x 165mm thick lintels with 140x45 timber plates inserted top and bottom. Screw fixing to timber plates at 90 mm spacing both sides.

Characteristic Capacity	250mm x 165mm	400mm x 165mm
Nc (kN) - Point Load SLS	9.5	18.0
EI (Nmm <sup>2</sup> ) - SLS	3.4E +11	5.2E +11
Mn (kNm)	-	8.5

Magroc lintels are to be assembled in a similar manner to wall panels but must have 8 gauge screws at 90 mm centres. Lintels supporting floors are to be loaded centrally otherwise specific engineering design is required to ensure that the box section can cope with the eccentricity. The top plate should not be joined at the ends of the lintel but should be continuous over the supports and lapped with the adjacent panels.

### Roof Lintel Spans:

250 mm lintels & greater – Roof loading width (m) for extra high wind zone  
with 1.815 kPa and 55 m/s

For roof loading width (m)													
span	1.61	.8	.22	.2	2.42	.6	2.83		3.23	.4	3.63	.8	4
1.2	●	●	●	●	●	●	●	●	●	●	●	●	●
1.4	●	●	●	●	●	●	●	●	●	●	●	●	●
1.6	●	●	●	●	●	●	●	●	●	●	●	●	●
1.8	●	●	●	●	●	●	●	●	●	●	●	●	●
2	●	●	●	●	●	●	●	●	●	●	●	●	●
2.2	●	●	●	●	●	●	●	●	●	●	●	●	-
2.4	●	●	●	●	●	●	●	●					-
2.6	●	●	●	●	●	--		---					-
2.8	●	●	-	--		--		---					-

**400mm lintels and greater - Roof loading width (m) for extra high wind zone  
with 1.815 kPa and 55 m/s**

		For roof loading width (m)												
span		1.61	.8	.22	.2	2.42	.6	2.83		3.23	.4	3.63	.8	4
1.2	•	•	•	•	•	•	•	•	•	•	•	•	•	•
1.4	•	•	•	•	•	•	•	•	•	•	•	•	•	•
1.6	•	•	•	•	•	•	•	•	•	•	•	•	•	•
1.8	•	•	•	•	•	•	•	•	•	•	•	•	•	•
2	•	•	•	•	•	•	•	•	•	•	•	•	•	•
2.2	•	•	•	•	•	•	•	•	•	•	•	•	•	•
2.4	•	•	•	•	•	•	•	•	•	•	•	•	•	•
2.6	•	•	•	•	•	•	•	•	•	•	•	•	•	•
2.8	•	•	•	•	•	•	•	•	•	---		---		-
3	•	•	•	•	•	•		----				---		-
3.2	•	•	•	•	-	-----						---		-

**Floor Lintel Spans:**

**250 mm lintels - Floor loading width (m) for residential floors (1.5 kPa live load)**

		For floor loading width (m)								
span		0.81	.2	1.62		2.42	.8	3.23	.6	4
1	•	•	•	•	•	•	•	•	•	•
1.2	•	•	•	•	•	•	•	•	•	•
1.4	•	•	•	•	•	•	•	•	•	•
1.6	•	•	•	•	•	•	•	---		
1.8	•	•	•	•	•	----				

**400mm lintels - Floor loading width (m) for residential floors (1.5 kPa live load)**

		For floor loading width (m)								
span		0.81	.2	1.62		2.42	.8	3.23	.6	4
1	•	•	•	•	•	•	•	•	•	•
1.2	•	•	•	•	•	•	•	•	•	•
1.4	•	•	•	•	•	•	•	•	•	•
1.6	•	•	•	•	•	•	•	•	•	•
1.8	•	•	•	•	•	•	•	•	---	
2	•	•	•	•	•	•	-	---		
2.2	•	•	•	•	•	---		---		
2.4	•	•	•	•	---			---		

### 3.3 Floor and Roof Spans

For the MagRoc Floor and Roof SIP systems we have the following tables to use when designing your spans within the house between 2 load bearing points. The LVL or I-Beam is standardised to be inserted into the panels edge at every 1200mm centres and from there you can use the following tables to specify the size of LVL or I-Beam needed to achieve your span.

#### 3.3.1 Floor Spans (for 1.5 kPa live load)

Span (m)	1.2	1.4	1.6	1.8	2	2.2	2.4	2.6	2.8	3	3.2	3.4	3.6	3.8	4	4.2
140x90 (SG8)	●	●	●	●	●	●	-	-	-	-	-	-	-	-	-	-
190x90 (SG8)	●	●	●	●	●	●	●	●	●	-	-	-	-	-	-	-
200x90 (I-beam)	●	●	●	●	●	●	●	●	●	●	●	●	●	-	-	-
200x90 (LVL11)	●	●	●	●	●	●	●	●	●	●	●	●	●	●	-	-
240x90 (SG8)	●	●	●	●	●	●	●	●	●	●	●	●	●	●	-	-
240x90 (I-beam)	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	-
240x90 (LVL11)	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
290x90 (SG8)	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●

#### 3.3.2 Roof Spans (for 1.8kPa wind loading - Very High)

Span (m)	1.6	1.8	2	2.2	2.4	2.6	2.8	3	3.2	3.4	3.6	3.8	4	4.2	4.4	4.6	4.8	5	5.2
150x63 (LVL)	●	●	●	●	●	●	●	●	-	-	-	-	-	-	-	-	-	-	-
200x65 (I-beam)	●	●	●	●	●	●	●	●	●	●	●	-	-	-	-	-	-	-	-
200x90 (I-beam)	●	●	●	●	●	●	●	●	●	●	●	●	●	●	-	-	-	-	-
200x63 (LVL)	●	●	●	●	●	●	●	●	●	●	●	●	●	-	-	-	-	-	-
240x65 (I-beam)	●	●	●	●	●	●	●	●	●	●	●	●	●	●	-	-	-	-	-
240x90 (I-beam)	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	-	-
240x63 (LVL)	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	-	-
300x63 (I-beam)	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	-



### 3.3.3 Floor Live Loading - Q (kPa)

Span (m)	1.6	1.8	2.0	2.2	2.4	2.6	2.8	3.0	3.2
<b>140x90 (SG8)</b>	3.5	3.4	2.2	1.3	0.4	-	-	-	-
<b>190x90 (SG8)</b>	3.5	3.5	3.5	3.5	3.5	2.6	1.9	1.3	0.6
<b>200x90 (I-beam)</b>	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
<b>200x90 (LVL11)</b>	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
<b>240x90 (SG8)</b>	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	2.9
<b>240x90 (I-beam)</b>	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
<b>240x90 (LVL11)</b>	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
<b>290x90 (SG8)</b>	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
<b>300x90 (I-beam)</b>	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5

Span (m)	3.4	3.6	3.8	4.0	4.2	4.4	4.6	4.8	5.0
<b>140x90 (SG8)</b>	-	-	-	-	-	-	-	-	-
<b>190x90 (SG8)</b>	-	-	-	-	-	-	-	-	-
<b>200x90 (I-beam)</b>	2.7	1.9	1.2	0.6	0.2	-	-	-	-
<b>200x90 (LVL11)</b>	3.2	2.3	1.5	0.9	-	-	-	-	-
<b>240x90 (SG8)</b>	2.3	1.7	1.3	0.7	0.2	-	-	-	-
<b>240x90 (I-beam)</b>	3.5	3.5	3.4	2.5	1.8	1.2	0.7	0.3	-
<b>240x90 (LVL11)</b>	3.5	3.5	3.5	3.5	2.7	2.0	1.4	0.9	0.5
<b>290x90 (SG8)</b>	3.5	3.5	3.1	2.6	2.1	1.6	1.2	0.8	0.4
<b>300x90 (I-beam)</b>	3.5	3.5	3.5	3.5	3.5	3.5	2.8	2.2	1.6

### 3.3.4 Roof Wind Loading - ULS (kPa)

Span (m)	1.6	1.8	2.0	2.2	2.4	2.6	2.8	3.0
<b>150x63 (LVL)</b>	5.0	5.0	4.7	3.6	2.9	2.3	2.0	1.7
<b>200x65 (I-beam)</b>	5.0	5.0	5.0	5.0	5.0	4.1	3.3	2.8
<b>200x90 (I-beam)</b>	5.0	5.0	5.0	5.0	5.0	5.0	4.5	3.7
<b>200x63 (LVL)</b>	5.0	5.0	5.0	5.0	5.0	5.0	4.1	3.4
<b>240x65 (I-beam)</b>	5.0	5.0	5.0	5.0	5.0	5.0	5.0	4.1
<b>240x90 (I-beam)</b>	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
<b>240x63 (LVL)</b>	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
<b>300x63 (I-beam)</b>	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0

Span (m)	3.2	3.4	3.6	3.8	4.0	4.2	4.4	4.6
<b>150x63 (LVL)</b>	1.4	1.3	1.1	1.0	0.9	0.9	0.8	0.8
<b>200x65 (I-beam)</b>	2.4	2.0	1.8	1.6	1.4	1.4	1.3	1.1
<b>200x90 (I-beam)</b>	3.1	2.7	2.3	2.0	1.8	1.8	1.6	1.4
<b>200x63 (LVL)</b>	2.9	2.5	2.1	1.9	1.7	1.7	1.5	1.3
<b>240x65 (I-beam)</b>	3.5	3.0	2.6	2.2	2.0	2.0	1.7	1.6
<b>240x90 (I-beam)</b>	4.7	4.0	3.4	2.9	2.6	2.6	2.3	2.0
<b>240x63 (LVL)</b>	4.7	4.0	3.4	3.0	2.6	2.6	2.3	2.0
<b>300x63 (I-beam)</b>	5.0	4.4	3.7	3.2	2.8	2.8	2.5	2.2

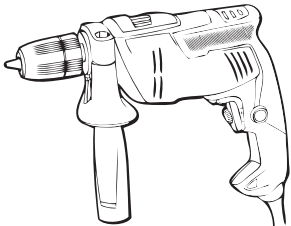
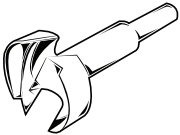
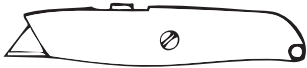
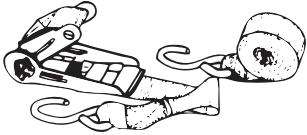
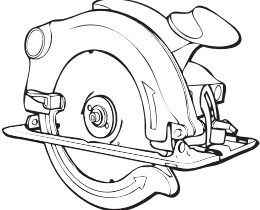
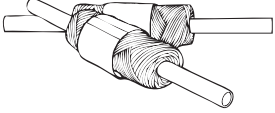
Span (m)	4.8	5.0	5.2	5.4	5.6	5.8	6.0
<b>150x63 (LVL)</b>	-	-	-	-	-	-	-
<b>200x65 (I-beam)</b>	1.0	1.0	0.8	0.8	-	-	-
<b>200x90 (I-beam)</b>	1.3	1.2	1.0	0.9	0.9	0.8	-
<b>200x63 (LVL)</b>	1.2	1.1	1.0	0.9	0.8	0.8	0.8
<b>240x65 (I-beam)</b>	1.4	1.3	1.1	1.0	1.0	0.9	0.8
<b>240x90 (I-beam)</b>	1.8	1.6	1.4	1.3	1.2	1.1	1.0
<b>240x63 (LVL)</b>	1.8	1.7	1.4	1.3	1.2	1.1	1.0
<b>300x63 (I-beam)</b>	2.0	1.8	1.5	1.4	1.3	1.2	1.1


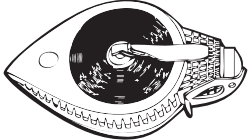

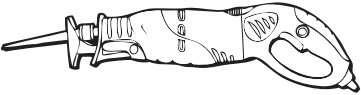
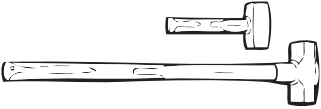
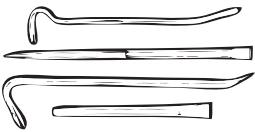


## 4.0 Tools, Fasteners and Materials

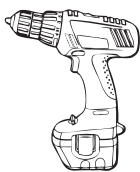
MagRoc board and SIP systems are very easy to work with, and standard carpentry tools should be sufficient to accomplish most tasks. There is however justification for some extra tools to be brought on site for specific tasks relating to SIP construction.

### 4.1 Standard Tools for SIP Construction

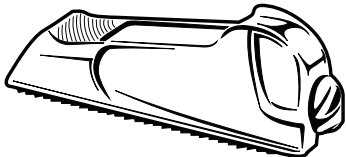
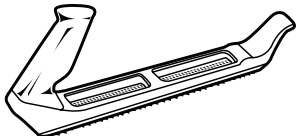
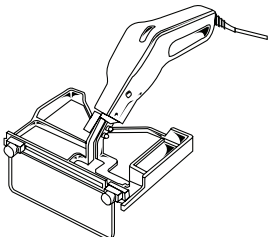
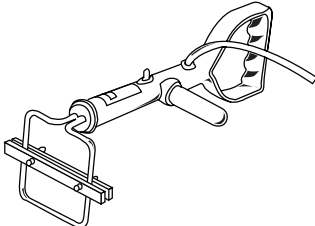
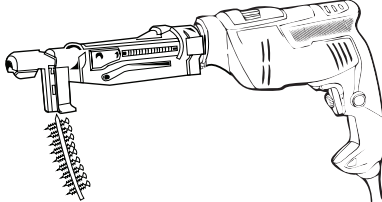
For the most part standard framing tools still apply to installing MagRoc products, below is a list of the most commonly used tools from your standard setup:

	Hammer Drill with 10mm or 12mm x 140mm concrete bit
	Forstner Bit 45mm / 45mm Hole Saw bit - To drill top and bottom plates for electrical chases
	Craft / Utility Knife - It is best to use an extra heavy duty knife 25mm (H-1) or similar
	Ratchet strap- 50mm x 8 meter ratcheting strap
	Skill saw with standard carbide tooth Rip Blade
	String line

	Carpenters square
	Chalk line
	2m Straight edge level
	Reciprocating saw with 250mm blades
	5.4kg sledgehammer
	Large Wrecking bar / Crowbar
	2.1m step ladder
	JigSaw

	Impact Driver / Cordless Drill
---	--------------------------------

## 4.2 Specific Tools for SIP Construction

	<p>Foam Rasp</p> <p>Available from any hardware shop and used for a variety of uses, for SIP's it is great for creating clearance in the EPS foam to a fine detail.</p>
	<p>Large Foam rasp</p> <p>For large EPS finishing jobs, when you cant use a Hot Knife in the gap this is the tool for it.</p>
	<p>Hot Knife with Sled</p> <p>Used for rebating the EPS around window, and door openings, runs a very hot metal knife through the SIP with a guide (sled) to give you exact dimensions. NOTE: Foam scoop does the same job below</p>
	<p>Foam Scoop</p> <p>NOTE: Foam scoops are generally better for field applications as they are more durable than hot knife's and cost far less. These products can be obtained through your MagRoc representative.</p>
	<p>Strip Gun – Self Feeding Screw Gun</p> <p>There are several brands and models on the market. MagRoc NZ can provide you with a rental unit if required. We recommend the Makita Quickdrive system.</p>

## 4.3 Fasteners

MagRoc have tested a specific set of screws that provide a superior hold with our MagRoc Board, and MagRoc Board to timber.

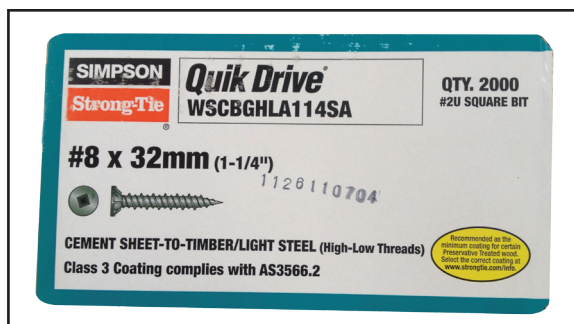
Some specific considerations when working with MagRoc SIPS is the following:

- **Do not** use "Black" screws in contact with MagRoc. Only Class 3 galvanised (or better) or Stainless steel.
- Always use a screw with a shallow head that has been designed with a 'cutting head' to counter sink into the MagRoc Board.
- MagRoc NZ supply fasteners as per spec and quantity for your contract if required.

### 4.3.1 Panel face screws

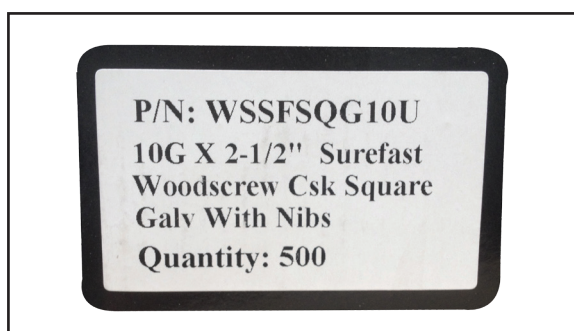
8G - 32mm - Simpson Collated Cement Sheet to Timber

Class 3 Galvanised coated exterior grade/ACQ screws complying with AS3566.2



### 4.3.2 Bottom plate fastening to MagFloor or Timber Floor & Wood to Wood Corner Stud screws

10G - 75mm Class 3 Galvanised coated screws or Simpson Collated 8G 75mm C3 Galv Screw





### 4.3.3 Roof / Flooring I-Beam Screws

To be specified as a site specific screw by the structural engineer based on wind and weight loadings. Refer to MagRoc for availability and specific screws required.

## 4.4 Adhesives / Sealants

Like our screws we have also specified our adhesives both foam and sealant types. This has been done to achieve better bonds and quality seals for our product.

**Some specific considerations when working with MagRoc SIPS is the following:**

- Never use solvent based glues or sealants with our product. Not only does this react severely with the EPS but we also want to keep the SIPS as 'green' as possible, and by eliminating all solvents this is one step closer to this.

### 4.4.1 Spray Foam & Spray Foam Cleaner



Penosil Foam Gun



Premium Foam Cleaner

Penosil Gold Gun – Low Expansion Polyurethane Foam

MagRoc NZ will supply the spray foam as per spec and quantity as part of the contract.

### 4.4.2 Building Sealant / MS Sealant



Sika MS

This product can be purchased at any leading building merchant.

#### 4.4.3 Flashing Tapes



TESCON EXTORA - multi-purpose weathertightness sealing tape

Product can be supplied with the panels if requested

#### 4.4.4 Building Wrap (optional - only used in specific design situations)



SOLITEX EXTASANA wall wrap

Product can be supplied with the panels if requested

#### 4.5.5 Construction Adhesive



BOSTIK GOLD ULTRA

Product can be supplied with panels, or purchased at your local hardware shop

## 5.0 Site delivery, handling and storage

### 5.1 Site access

Panels are normally delivered by Hiab truck and trailer and can occasionally create problems on site. Any special delivery conditions should be relayed to your MagRoc representative well before delivery date.

Some things to consider;

- Driveway widths
- Turning areas
- Drains, culverts and bridge capacity
- Trees and overhanging vegetation
- Overhead wires
- Parking areas and space for stabilisers
- Location of storage area for panels

Alternative delivery systems may include, truck mounted forklifts or smaller shuttle trucks.

### 5.2 Delivery

Delivery companies normally allocate a specific time for unloading. It is therefore important that delivery plans are in place, and if needed, plenty of labour is available. Ensure the delivery company is aware of the site conditions well before the date required. It is often prudent to have a representative of the transport company visit site prior to delivery.



Panels are stacked on 2 pieces of dunnage attached to the pallet with steel banding.

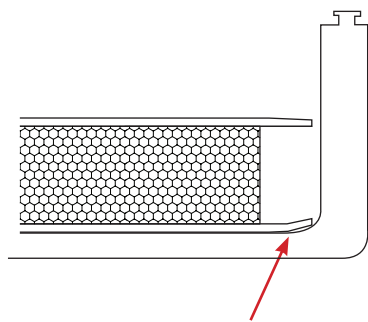
The dunnage will stay in place until the banding is cut, allowing panels to be picked up and set down without the operator or helper needing to set dunnage.

Pallets are stacked with the exterior side of the SIP panels facing down except the top panel, which is flipped over exposing the exterior side of the panel to the top. This allows for handling on the bottom and stacking on the top without soiling or damage to the interior face.

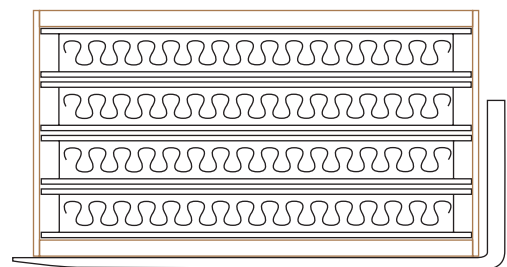
### 5.3 Handling

While two men can generally handle a single panel, pallets of panels must be either fork lifted or craned off the truck and into the storage area.

Forks on a bobcat or forklift work well. Keep in mind when unloading, and this should be mentioned to the operator, that the forks may have a radius that protrudes into the horizontal/vertical corner of the fork. Loading panels tight to the mast means the bottom face of the SIP will have to bend where it meets the back of the fork. It generally will not damage the panel unless it is impacted at contact. Shaking the forks when tilting back will cause an impact.



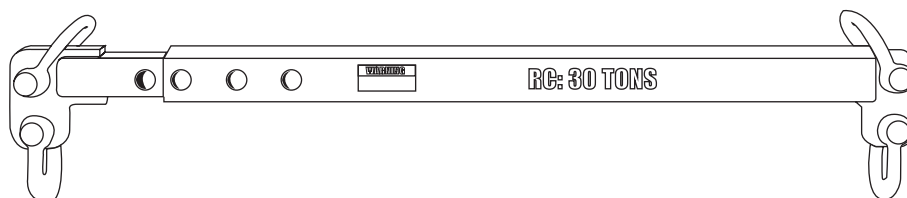
Be aware of bending bottom panels tight to the forks mast



Be aware of forks protruding beyond the panels damaging other stacks when loading / unloading

Where a crane is to be used to lift bundles/pallets into position, care must be taken during rigging to avoid crushing of the edges of the MagRoc with slings. The use of spreader bars will eliminate any chance of damage. The crane operator may supply or they generally can be rented locally. Be sure to discuss this with the crane supplier when booking.

Adjustable Spreader Bar



A fixed width bar is also sufficient as long as the width is approximately 2400mm.

## 5.4 Storage

Panels take up a good deal of room on site. Although the manufacturer tries to load the delivery truck in the order that the panels will be required, it is quite common for the on site order, or requirement, to be altered. It is therefore advisable to store the panels where they can be easily sorted.

Unlike OSB SIP's, MagRoc SIP's are not susceptible to normal moisture or dampness. Never the less, it should become good working practice to cover the panels prior to using and store them on gluts above the ground.

Timber to be used in the construction is susceptible to moisture and must be adequately protected from taking on water. The bottom plate is the most likely to absorb water because in heavy downpours the slab may have 20-30mm of water dammed up for sometime. Care to minimise damming is essential.

## 5.5 Documentation Regarding Delivery

The truck driver will hold a Bill of Lading and or Packing Slip/Bill of Materials. The receiver is responsible for confirmation and inspection of the delivery. It is important to count materials and inspect for shipping damage. As material is unloaded, check to confirm the quantities balance with the packing slip from MagRoc NZ. Initial each line item as they are totalled.

Note any damage on the Bill of Lading and or Packing Slip. You can then discuss any discrepancies with your MagRoc representative when convenient.

Some damage to panels may be still acceptable it does not make sense to cull a panel with minor damage when the damaged area could be placed where it will be cut out for a window or opening.

Signing of the Bill of Lading and or Packing Slip without notes indicates that all materials listed have been received in full and acceptable condition. Always contact your MagRoc representative if there are any mistakes or misunderstandings.

## 6.0 SIP Panel Connections

A completed MagRoc SIP's construction is a monolithic structure. To ensure the integrity of the system it is therefore extremely important that panels are structurally connected at all joints in walls, and floor and roof system if used. The details in this section provide standard jointing techniques that will satisfy most domestic and light commercial situations. Occasionally, specific design requirements may require engineering considerations for flexural, racking or axial capacities.

### 6.1 Panel to panel joints

#### 6.1.1 Box spline

The most common panel joint is achieved with the box spline. This is a composite member prepared exactly the same as the SIP it is joining, but has a total thickness of 1 - 2mm less than the EPS in the SIP. i.e. 24-26mm thinner than the main panel. In a standard 165mm panel the splines are cut at 150mm wide. This gives a 75mm overlap on each of the joining panels. Refer to architectural details for other spline types. E.g. timber point load and ducting splines.

The panels will normally be delivered to site with the EPS at the edge to be joined, recessed 75mm. Refer to Figure 2.0, 3.0, 16.0, & 17.0 for fixing procedure.

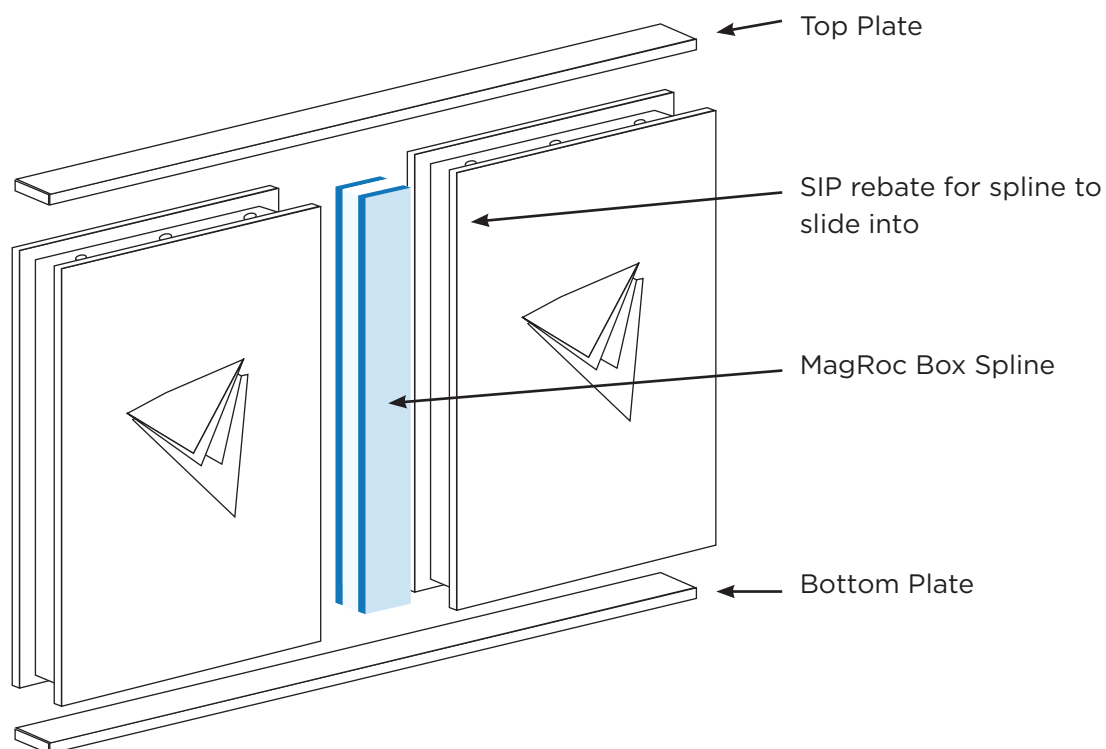
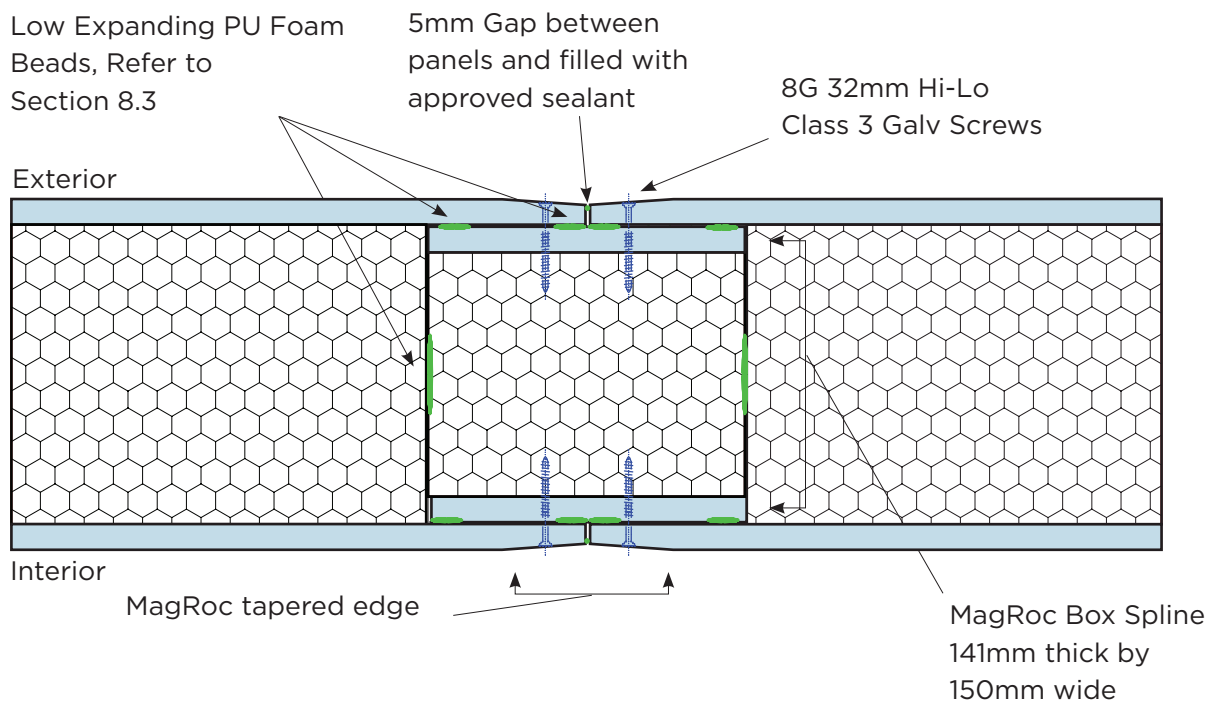
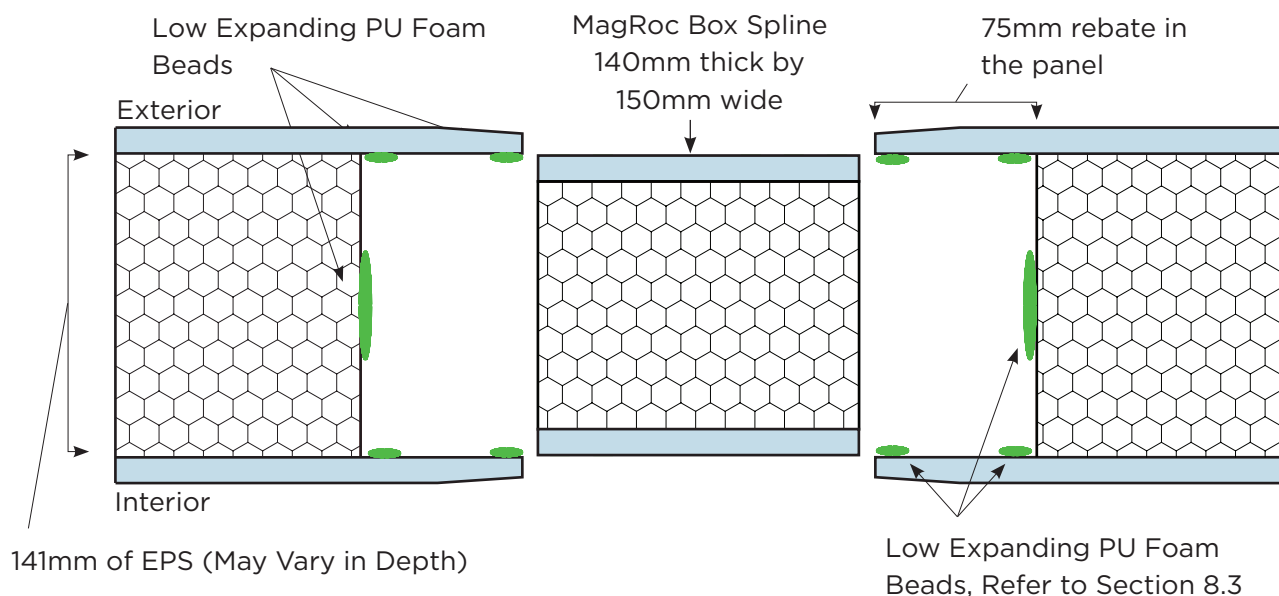


Figure 2.0 3D Cross section of a Box Spline

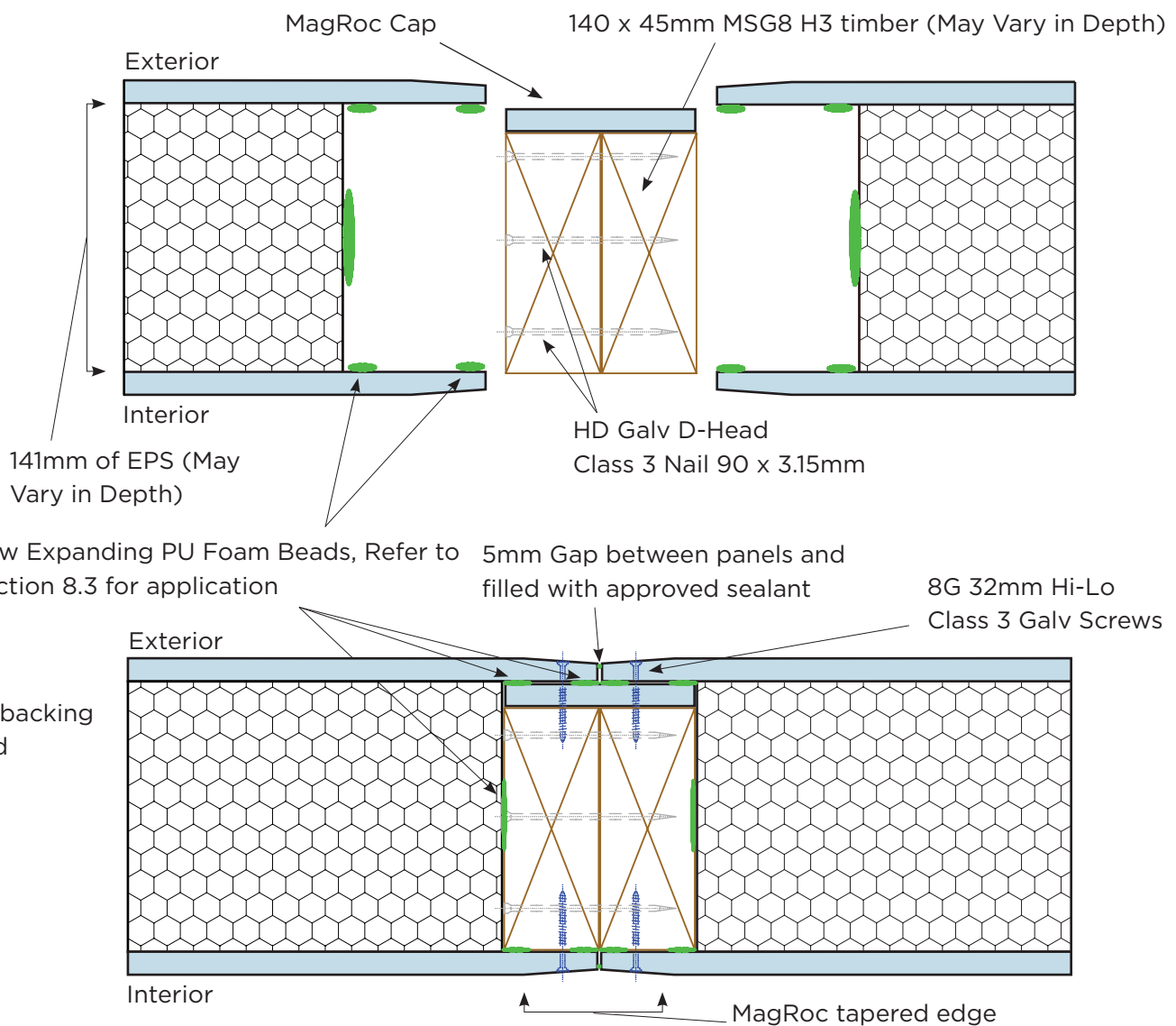


**Figure 2.1 Vertical diagram of a Box Spline**

### 6.1.2 Timber spline

Two stud lengths of timber, 12mm narrower than the EPS thickness, are glued and nailed together to form a double stud. A 12mm thick strip of MagRoc board is fixed to the outer edge of the double stud, making the overall width equal to the EPS thickness. Just like the boxed spline, the EPS on the edge of the panel to be joined is recessed back half the thickness of the double plate. The same is done for the second panel. The double stud spline is then fixed in the same manner as the box spline. Refer to Figures 3.0 and 4.0





**Figure 3.0 Vertical Diagram of a Timber Spline**

### 6.1.3 Control Joints

The control joint spacing should meet the following criteria. the dimensions have been reduced from industry standards to accommodate the closest panel increments of the MagRoc system. If these MagRoc control joint specification conflict with coating product manufacturers recommendations/ instructions, the coating products instructions will be deemed to supersede and therefore apply.

- All horizontal joints in stacked panel situations should be control jointed at maximum 3.000m centers
- No length should be greater than 8.400m (7 panels) in either direction or from any corner. Where surface colour is to be a dark colour, this dimension shall be reduced to 6.00m
- No length-to-width ratio should exceed 2 1/2 to 1 in any given panel.
- Control joints should be placed at any point where MagRoc panels meet another assembly or system.
- Control joints should be 12mm deep by whatever the architectural width that is required not be less than 6mm
- All control joints must be treated with industry standard metal or plastic edge trims and stainless/ double hot dipped galvanized fasteners or Magroc approved adhesives and sealants.

The vertical control joint shall be formed at specified spline joints by reducing the screw centers on one side of the spline to 400mm centers.



## 7 Job Start and Field Preparation

### 7.1 Documentation

Obtain these items before starting the job:

- i. Engineered Panel Drawings if applicable
- ii. Architectural Design Drawings
- iii. Floor & Roof Truss Engineered Drawings
- iv. Window Layout by window supplier

**NOTE: Always check and use site specific details over and above the typical details shown in the manual.**

**NOTE: Always check with Electrician before start if unsure of direction of wire travel into panel chases. If at all possible, it is beneficial to keep electrical circuits to internal walls.**

The normal conclusion is as follows;

- i. Single storey with basement – electrician will pull main floor wire down to joist cavity from electrical box and basement wiring up from electrical box to joist cavity.
- ii. Single storey on slab – electrician will always pull wiring up to the roof truss area from electrical box.
- iii. Two storey with basement – can go either way – for this one definitely check with electrician. Option (i.) above applies to main floor and basement with up to truss level for upper floor. Alternatively they may choose to join the main and upper floors.
- iv. Two storey on slab – All wiring will pull up from main floor and down form second storey to second storey joist cavity.

**NOTE: Under certain conditions the plasticizer in the PVC sheathing of standard electrical cables may migrate into the polystyrene insulation, and over time cause the sheathing to become brittle. To avoid this, specifically designed ‘non-migratory’ TPO cable should be used.**

**NOTE: Electrical Wiring can either be pulled up or down from the electrical outlet or switch boxes.**

Therefore the top or bottom plate requires drilling to line up with the chases in the SIP. It is easier to only pre-drill the plate where the chases will be used. This is why it is important to discuss previous to the job start with the electrician. Plates can be drilled later but at the expense of greater time and effort. Top plates take about 15 minutes to mark and drill on a typical 112m<sup>2</sup> floor size. Bottom plates are drilled as the wall is built. This addresses the amount the wall will grow due to an uneven floor. The drill size is greater than the chase size allowing for some margin of error. We recommend marking all the certain locations and any that seem possible once the customer does the electrical walkthrough with the electrician. This will cover most contingencies and make things easier for the Electrician.

**NOTE: MagFloor100 and MagRoof100 panels over joists or trusses provide easy paths for plumbing and electrical wiring.**

## 8.0 Panel Installation details

Normally wall panels are installed vertically. There are a number of fixing details that can be used and they will depend on floor type (whether concrete or timber), panel thickness, bottom plate type, structure height, and specific engineering requirements.

If the panel installation is on a pre laid floor, check all bottom plate dimensions against the plans. Resolve any discrepancies before starting. Altering panel sizes can be costly and time consuming. When wall, floor or roof panels are precut in the factory, small discrepancies in setout can result in large variations that may require panel replacement or re cutting. The adage, 'start plumb and square, and problems are rare' is no more important than when working with Structural Insulated Panel's. Pre-planning and attention to accuracy at the floor level is imperative, otherwise the panel installation is compromised and small variations quickly become large ones. Panel skins take the main axial loading and the inside skin should bear fully on the slab or floor.

Panels can be heavy and lifting equipment may be required. The average weight of 2.4 by 1.2m Magroc SIP wall panels is 80kg, so the installer should consider how he proposes to handle the panels well before installation commences.

### 8.1 Installing Basics

Always install in a clockwise direction. Corner panels always run the same direction due to the fact they are pre-manufactured for only one direction. The left hand panel runs through to the end of the plate. A Magroc strip or DPC may be placed under the plate. This not only protects the timber plate from water being absorbed by the plate but also allows us to pack the strip level before fixing the plate. Remember slabs should be +/- 1mm over 1.000m

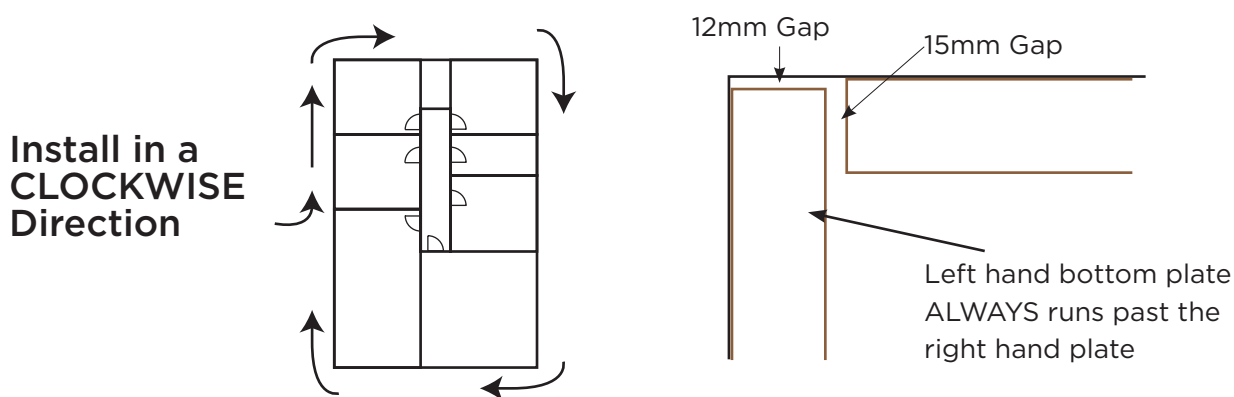


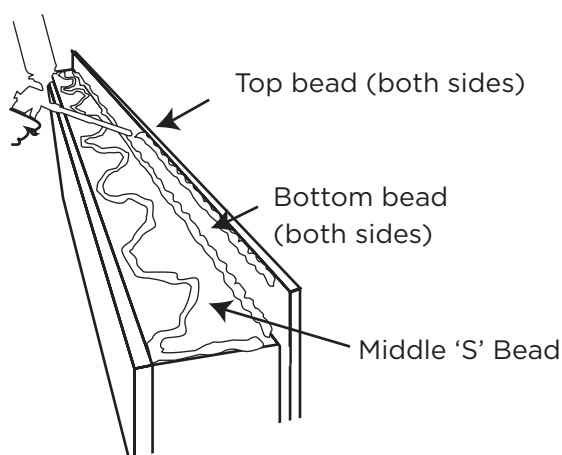
Figure 4.0 Installation Direction Diagram

Plate layout is also important, as anchor locations should be planned for electrical chases, vertical corner plates and doorways. If on a concrete slab electrical chases will not be a factor unless a conduit is cast in and is sticking out of the slab. On a wood floor, if the electric's will be run down, the nailing of the plates should be staggered to avoid the wire chase holes. Standard concrete slab anchors are 125mm x 12mm galvanized thru-bolts.

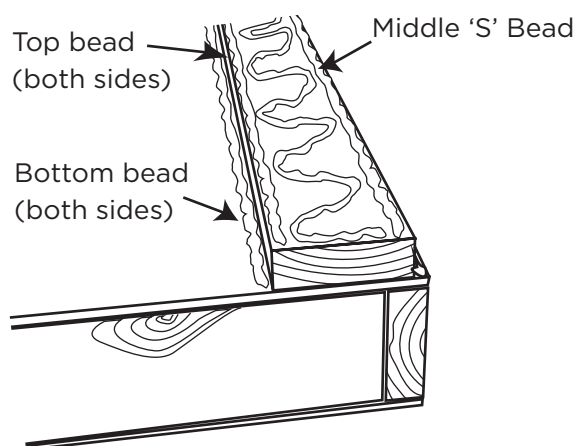
## 8.1.1 Applying Adhesive and/or Foam

Application of adhesive/foam is an important part of assembly. It is responsible for structural integrity and to provide a continuous air barrier and prevent moisture penetration. Use several passes of adhesive/foam in order to assure compliance. Before installing each panel, measure and place a mark on the plate where the panel will terminate. This shows where to stop with any adhesive applied to or beside the plate.

### Low Expansion Adhesive Foam



**Fig 5.0 Spraying Foam  
On to the Panel**



**Fig 6.0 Spraying Foam on to  
the Bottom Plate**

For the face of the box spline to the backside of the MagRoc on the SIP, use the specified adhesive foam or certified structural adhesive that does not react with EPS. Refer to 3.4 for recommended products. Apply the beads at the edge of the back face of the MagRoc and in the corners where it meets the EPS. (As shown above in Fig 5.0)

Pre-apply the adhesive to the inside of the bottom of the SIP as directed above. Also apply the adhesive to the inside recess of the left hand side of the SIP. It is also good to run a bead on either side of the plate where the SIP will bear. (As shown above in Fig 6.0) This acts like grease when sliding the panel down into place.



## 8.1.2 Cutting Panels / Rebating EPS

You will find when you come to openings and corners you may need to cut down panels to fit. This is an easy process once mastered but does require some accurate measuring and using a EPS hot knife to create the correct rebate for your next panel connection.

### Step by Step for Cutting a Panel:

1. Mark identical lines on both side of the panel
2. Cut the first side with your Skill Saw
3. Flip the panel over (supporting your cut) and proceed to cut the other side.
4. The typical cutting depth of your skill saw may not cut all the way through the EPS. If so use a reciprocating saw and carefully cut the EPS in between.  
(Be careful not to touch either MagRoc Board skins to ensure you keep a clean straight cut)
5. Place the panel on edge to be rebated for the connection detail required.

### Step by Step for Rebating EPS out of a Panel:

1. Set the panel on edge and on stable / level ground with the edge for rebating facing upwards
2. Set the depth / gauge of the guide on the hot knife to the required depth.
3. Turn on the hot knife and when up to temperature dip the hot knife carefully into the panel ensuring you dont bend the blade.
4. Move the hot knife along at a slow and consistent speed using the guide hard against the MagRoc board skins to get an accurate rebate.
5. Any left over EPS or high spots should be cleared out with a foam rasp / craft knife. Low spots will be filled with adhesive foam



## 8.2 Marking Out

Mark out the perimeter of the exterior walls with a chalk line. Mark the inside of the bottom plate. (that is, the plate, not the inside line of the SIP) Mark the floor on this line with black marker or pencil, for easy recognition. Measuring from this line, the outside of the plate should be 5mm past the slab/floor edge.

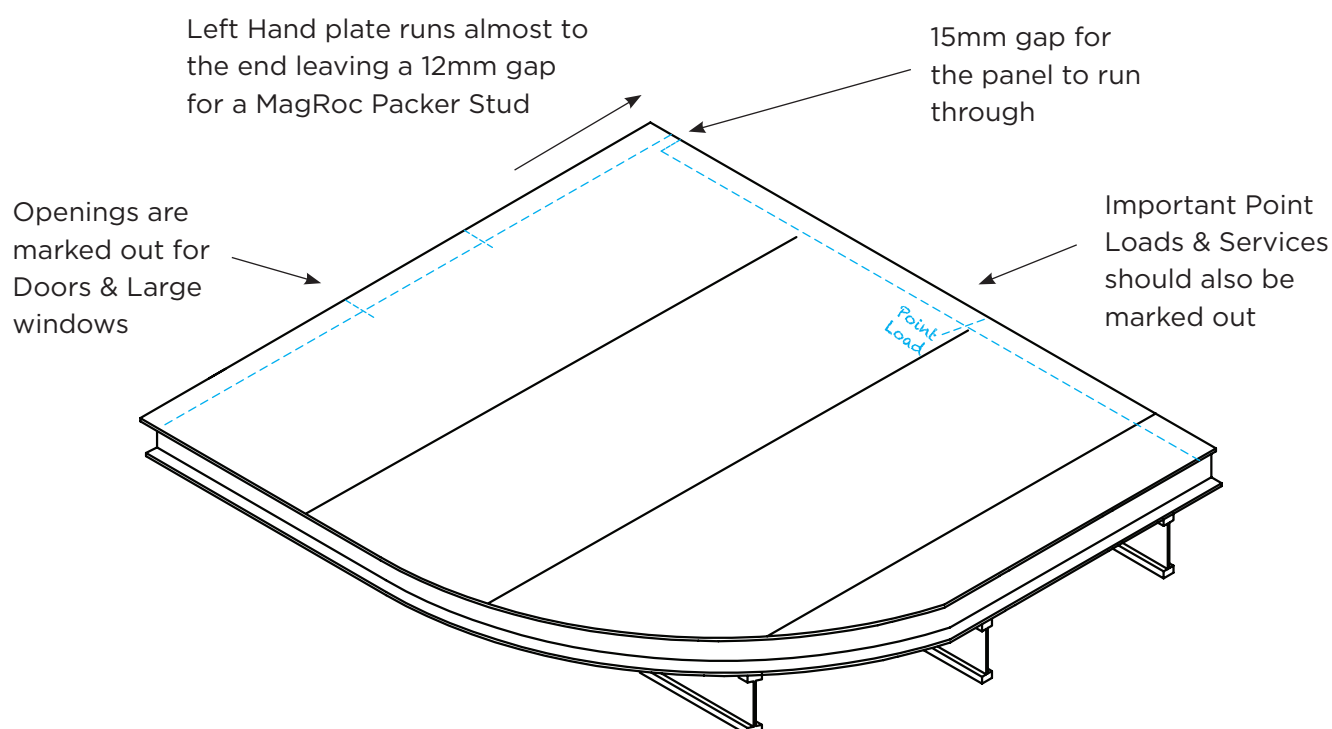


Fig 7.0 Marking Out Bottom Plates

**NOTE:** Ensure you are square before proceeding any further.

In most cases the outside MagRoc skin will run past the floor plate over the rim board or concrete slab edge. In this case the bottom plate will be 5mm past the outside edge of the floor. Keep in mind that specific engineering may require the outer skins of a SIP to bear on a foundation of some sort. Check plate detail on engineering drawings before set out.

As long as you are not installing on what will be the finished surface you can mark the floor in front to the inside of the plate with electrical, door, window and point load locations. Normally these would be marked on the plate but the SIP will totally cover the plate.

**With panels, correcting errors is a lot more work than with stick framing! Prep Right & Get it right first time!**

### 8.3 Installing the Bottom Plate

It cannot be stressed enough how important a proper layout with all information is before starting. Some professional builders do not complete a full or proper layout before starting to build walls on their projects. They consistently have to go back and correct errors because of it.

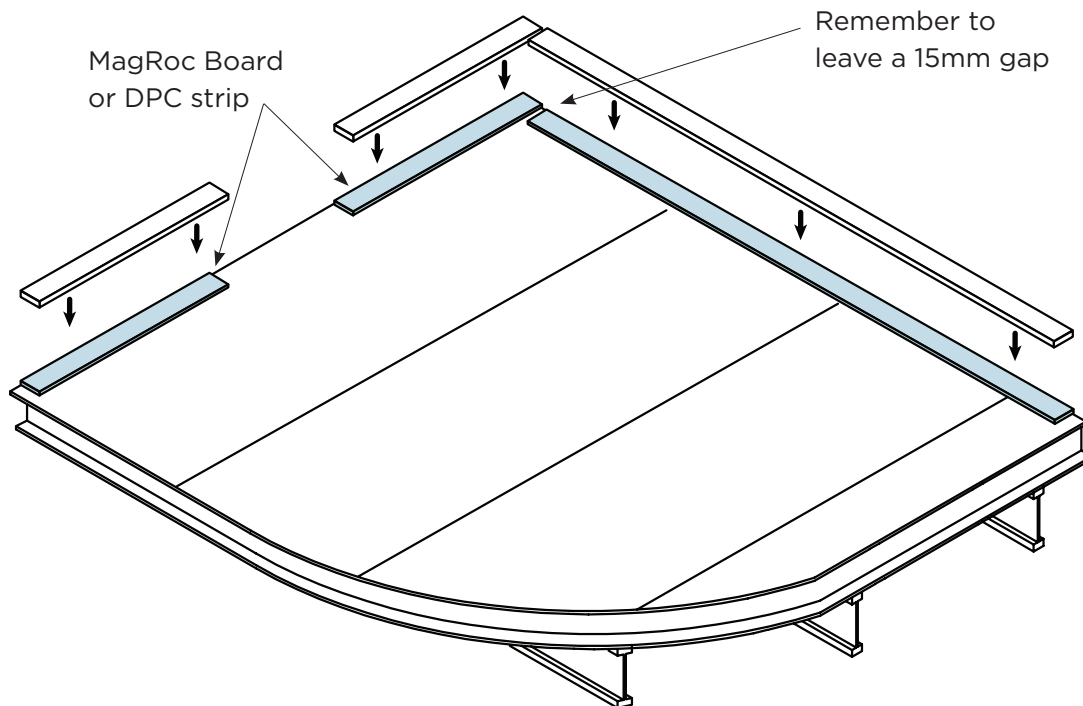


Fig 8.0 Installing Mag Bottom Plates

#### Step by Step:

1. Layout the bottom plates starting at a corner. Keep the left hand plate 12mm short of the outside corner. This is for the 12mm MagRoc strip protecting the corner stud.
2. Then install the right hand plate with a 15mm gap, which will allow the bottom skin of the left hand panel to run through without trimming.

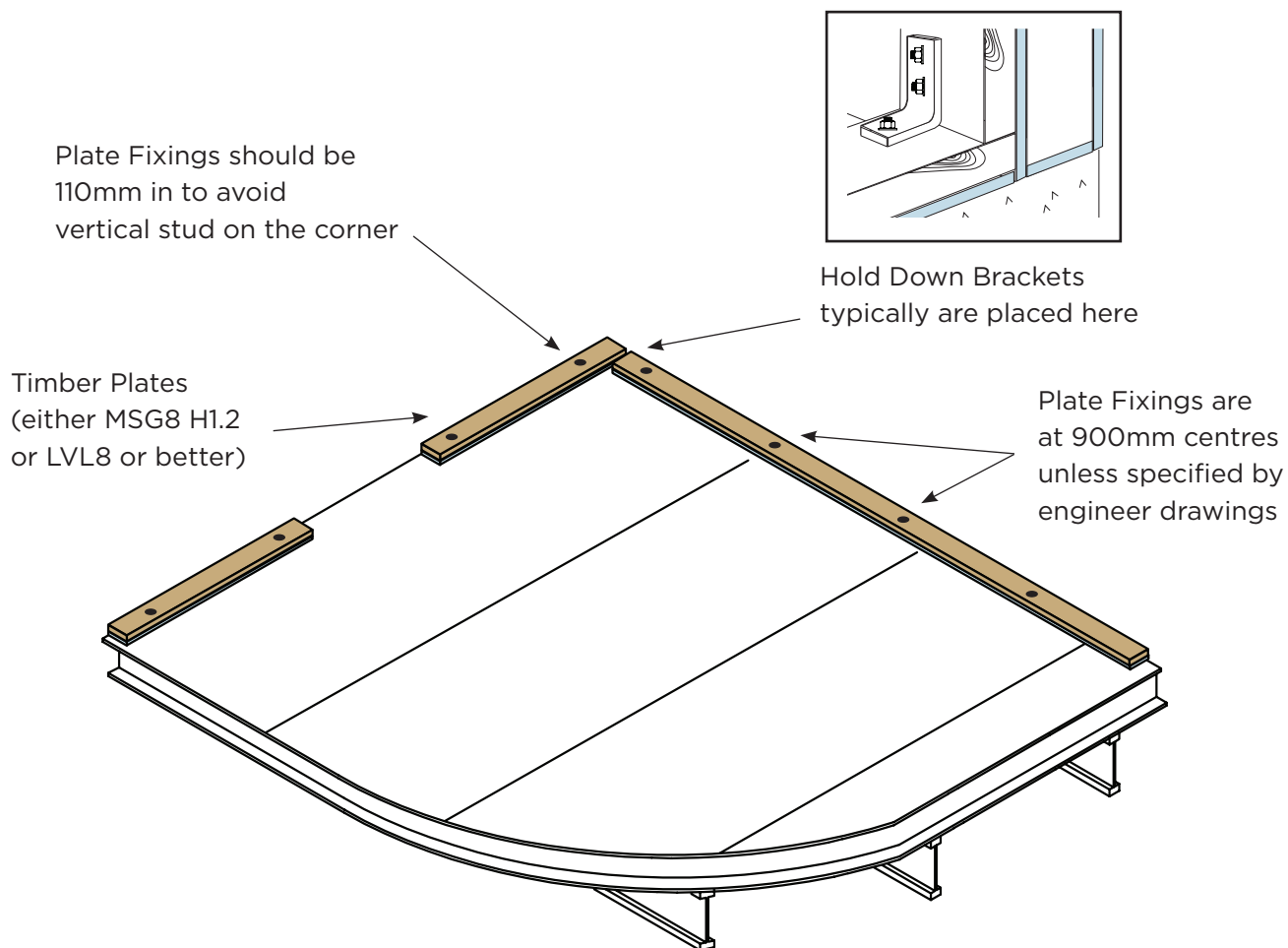


Fig 9.0 Installing Timber Bottom Plates

### Step by Step:

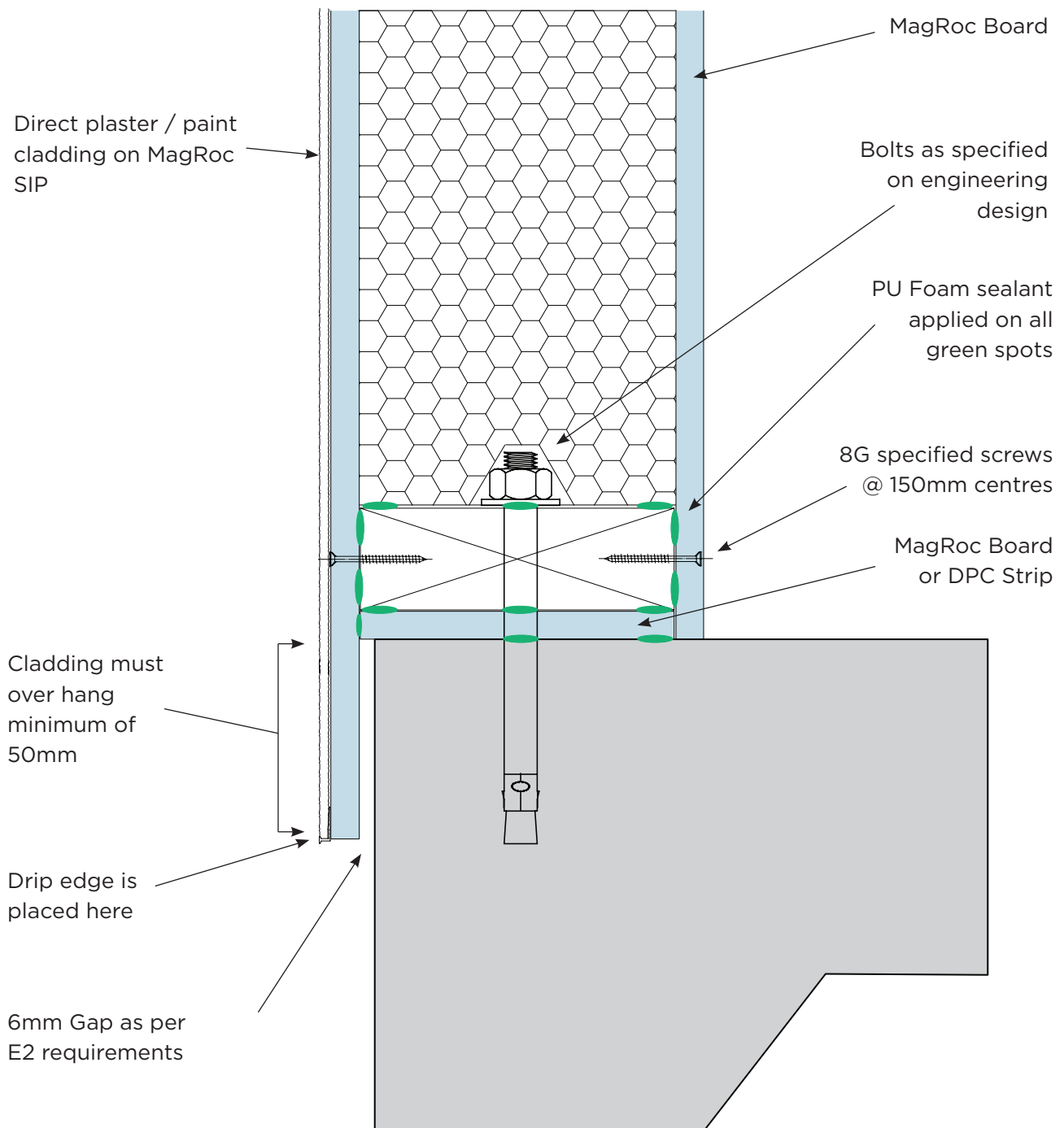
1. Fix the plates over the MagRoc strip avoiding the corner stud and service duct positions.
2. On timber and SIP panel floors the bottom plate should be screw fixed with 8g 75mm galvanised screws into the rim board & floor joists.
3. For Seismic or high load locations, refer to specific engineered drawings and hold down bracket locations. A bowmac plate is generally specified for corner hold down in these positions and comfortably achieve 170 B/Units.

**When all plates are fixed and the level and square is reconfirmed, it is time to start standing panels.**



## Figure 10.0 MagRoc 'Typical' Floor Detail - OverHang with Direct Cladding on Concrete Slab

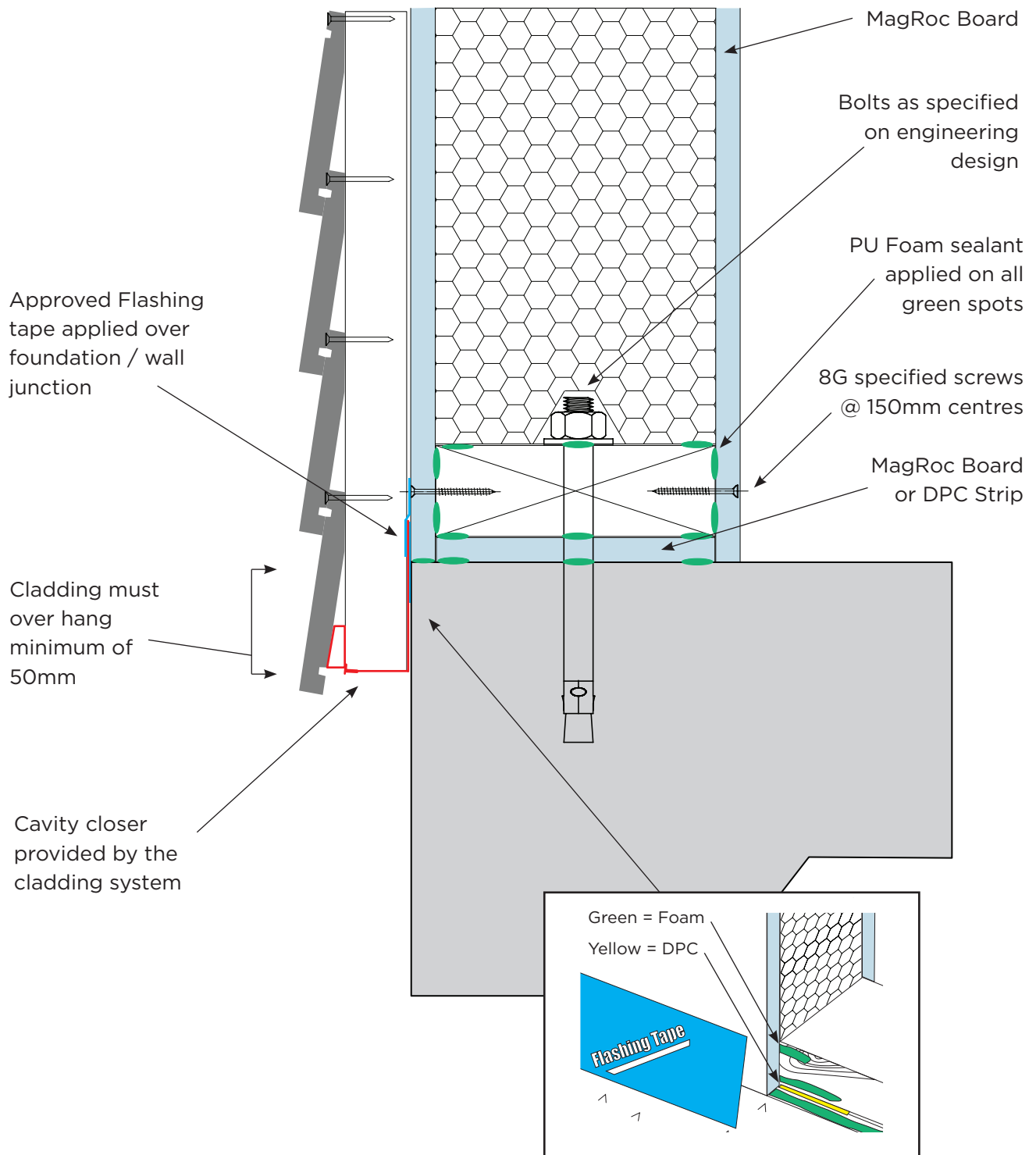
This is the preferred method for direct cladding on a concrete slab and will meet the E2 requirements of the Building Code. The plate is set 5mm beyond the outer edge of the floor slab or boundary joist. This allows the out skin of the SIP to slid down over the floor/plate position and act as a weather seal and drip line.





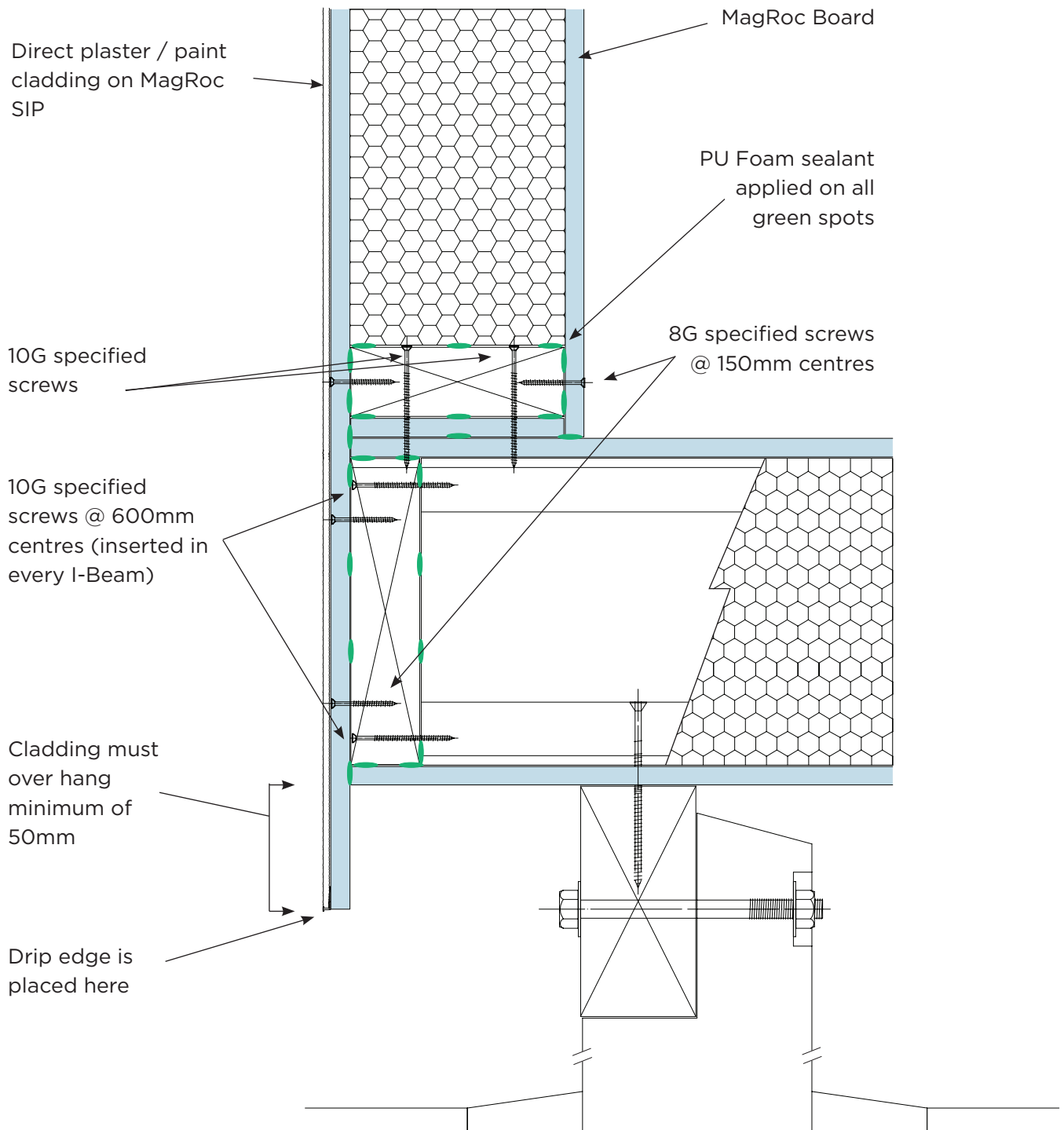
## Figure 11.0 MagRoc 'Typical' Floor Detail - Bearing on the Slab with Cavity

In this instance, for cavity based cladding systems the plate is set 12mm inside the line of the slab edge or boundary joist and the outer skin of the SIP sits down on the outer edge of the floor. Care must be taken when weatherproofing the floor/plate junction. Approved flashing tape, MS sealant is applied to the cavity closer, & Tescon tape over the cavity closer can achieve this requirement.



## Figure 12.0 MagRoc 'Typical' Floor Detail - OverHang with Direct Cladding on Suspended Floor

In this instance, for direct cladding systems is applied to the outer SIP panel which hangs 50mm past the bottom of the suspended floor to create a drip edge and weather boundary. This can be applied to timber or in this case the MagRoc WarmFloor. Care should be taken when sealing the underside joint in the floor.



## 8.4 Panel Installation

### 8.4.1 First Panel

Check layout dimensions against MagRoc shop drawings to determine start point. You should find that layout starts to the right side of a doorway (always looking from the inside) If access is required in a certain direction, start past that point to the next doorway.

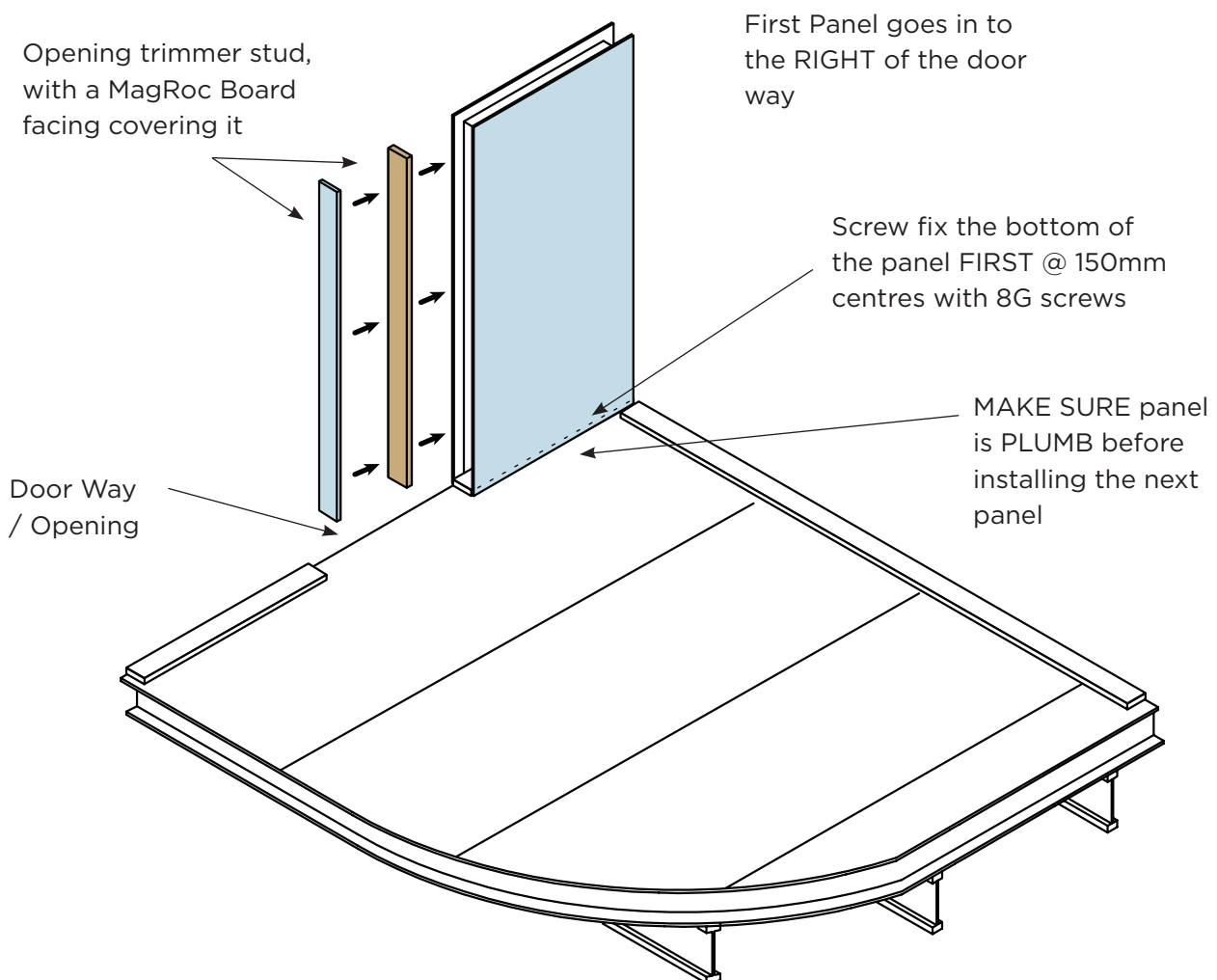
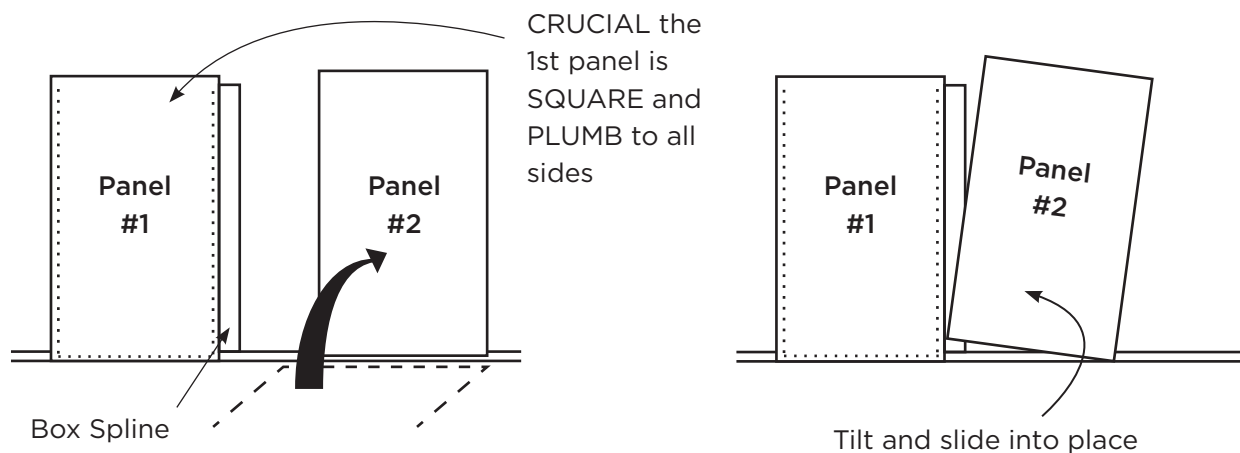


Fig 13.0 Installing First Panel

At this point the bottom plate should be fixed and all windows, doors, electrical, plumbing and point loads should be marked.

**NOTE: If you are using 'stock size panels' without formed openings and are cutting out windows after the walls are installed then the point loads and electrical are the most important issue at this time.**

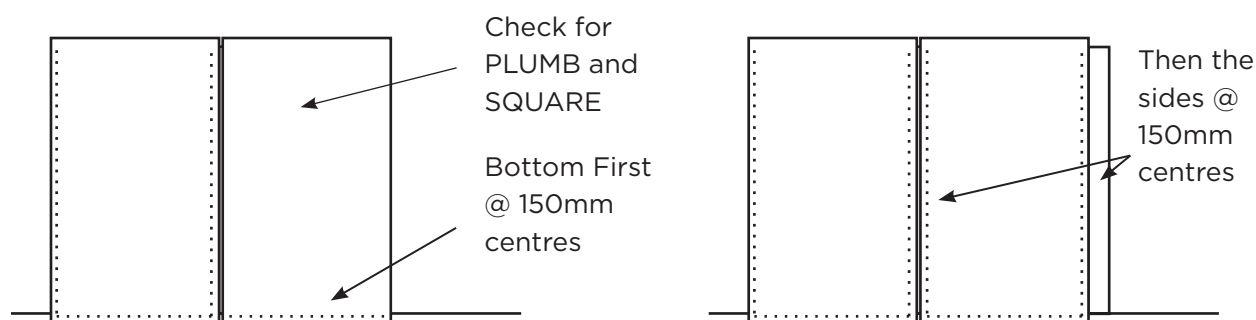
#### 8.4.2 Next Panels



1. Tilt the next SIP panel up to the right and set over the plate with the box spline on the left.
2. Then apply some pressure and slightly tilt the SIP while lining it up to fit either side of the box spline. The panel gains momentum and falls into place tight to the box spline on the left. You want to have enough momentum to set it but not so much that it hits and bounces out away from the box spline.

If the SIP does not land tight, or bounces out from the box spline, you will need to use a ratchet strap or heavy hammer with a block against the skins of the SIP to move into position.

Once set in place, plumb the SIP (from in to out) and then fasten the inside bottom (generally easier first). The panel will stay in position if you do this from the start. No bracing is required while installing unless there is a high wind and/or a long wall. It is advisable to brace long walls or longer partially finished wall sections during absence from the job site.



3. Once the bottom is fastened off fix the side. Panels should be screwed off as soon as feasible as the adhesive will start setting up immediately and it is important to get a good bond between the skin of the SIP and the box spline.
4. Continue drilling holes for electrical where applicable and repeat SIP installation up to last panel before the corner.

### 8.4.3 Corner Panel Installation

Corners are simple when you get the basics right, the left hand panel will always run to the corner. This panel will generally need cutting to size. Measure the remaining length and deduct 5mm clearance. Rebate the EPS (refer to Section 8.1.2).

#### Step by Step:

1. Install the corner stud in the rebate, (N# 1)
2. Then cover with MagRoc facing strip to provide waterproofing layer. (N# 2)

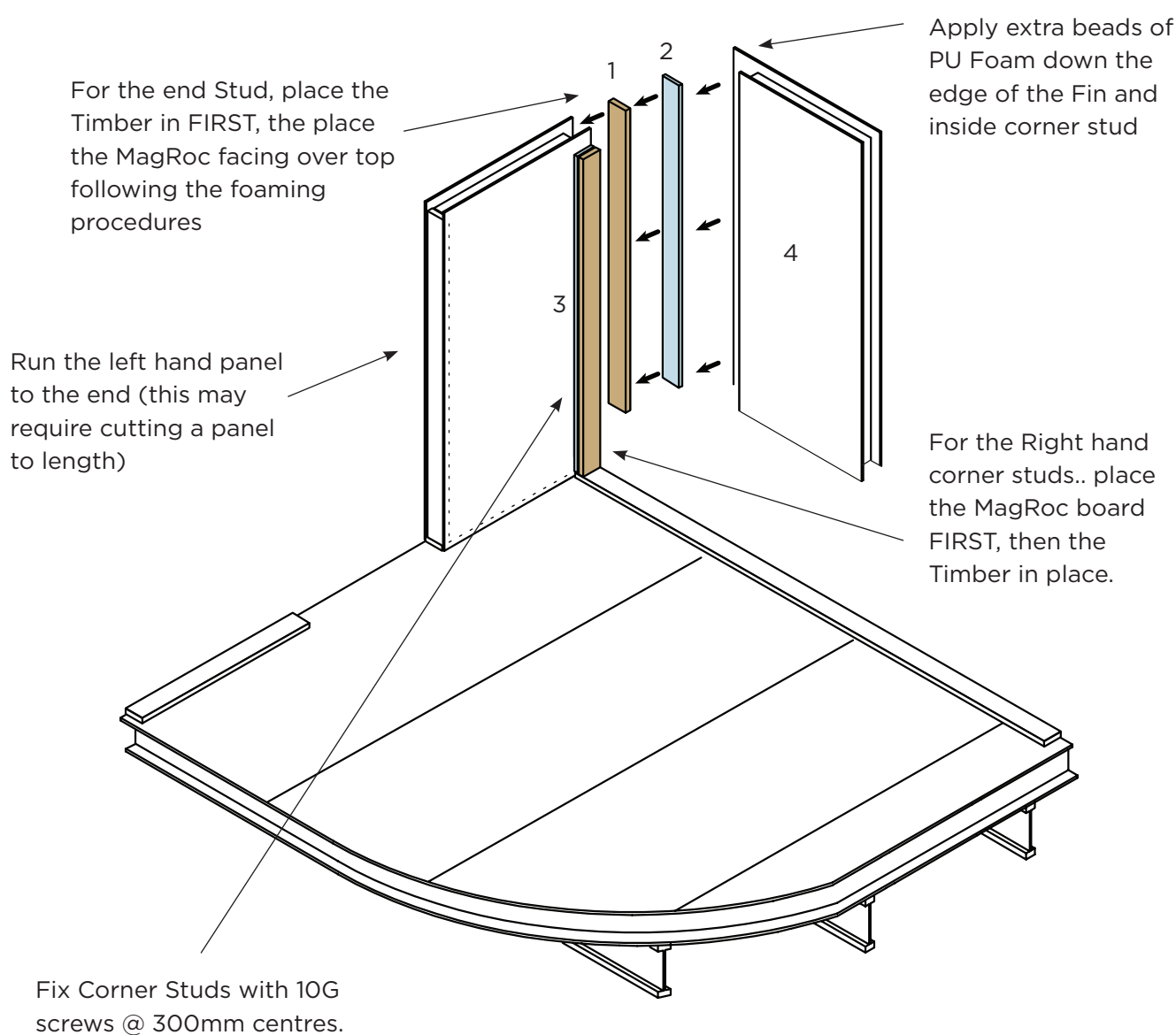


Fig 14.0 Installing Corner Panel

3. Now install the internal / return corner stud and prepare entire area with adhesive foam for the corner return panel to be installed.

NOTE: You will have a set of 'Corner Panels' that are prepared with larger fins to be able to be placed as the RIGHT hand panel (seen below floating) you will need to cut the internal fin off.

4. Just like wall panels, corner panels are easier to install by 'tripping' them into place. Its is critical that you have the receiving panel plum or the corner panel will not sit flush with it.

Now install the Corner Panel and once PLUMB and FLUSH with the receiving panel screw off @ 150mm centres with 8G screws, BOTTOM FIRST, then up the studs.

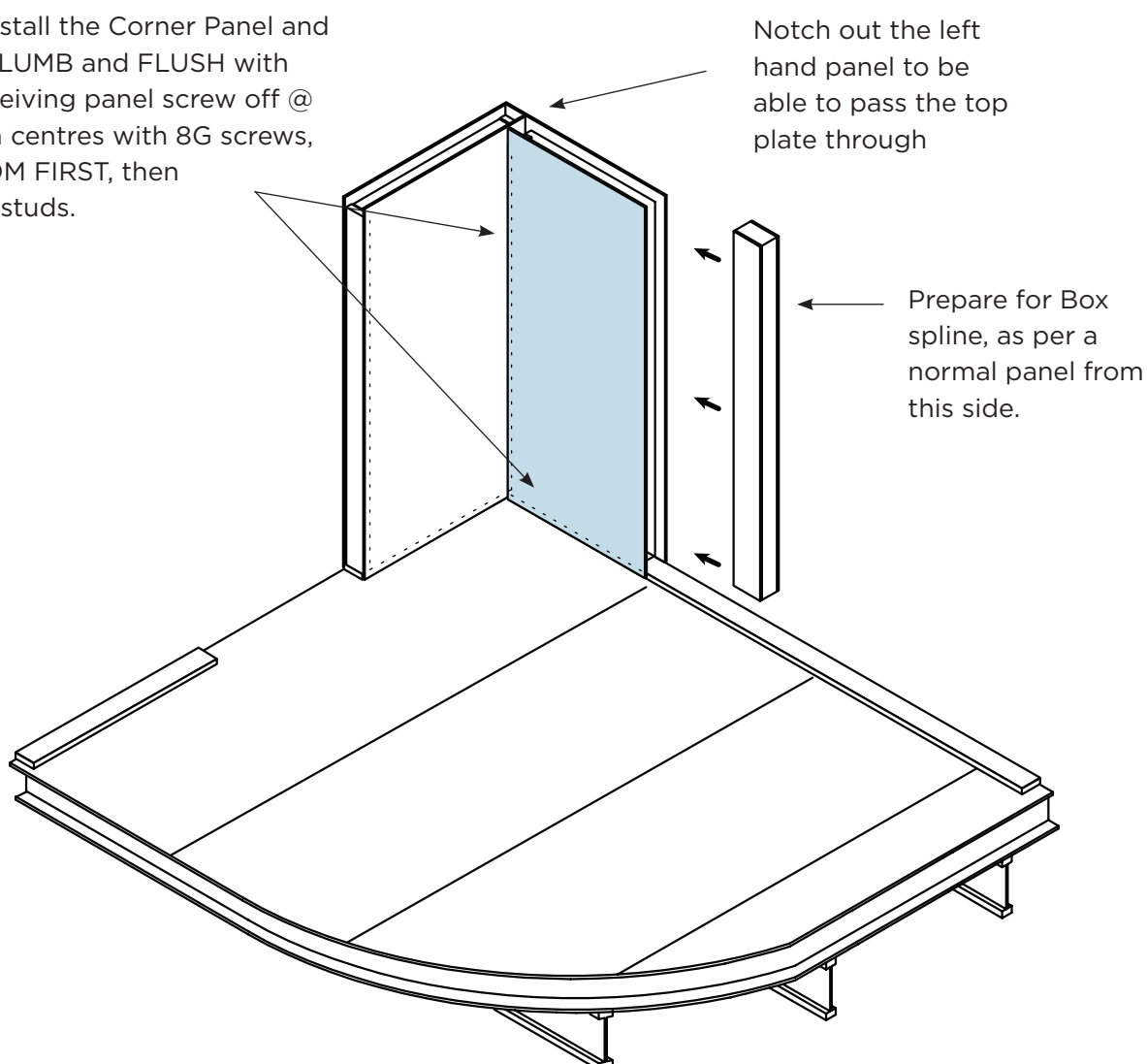
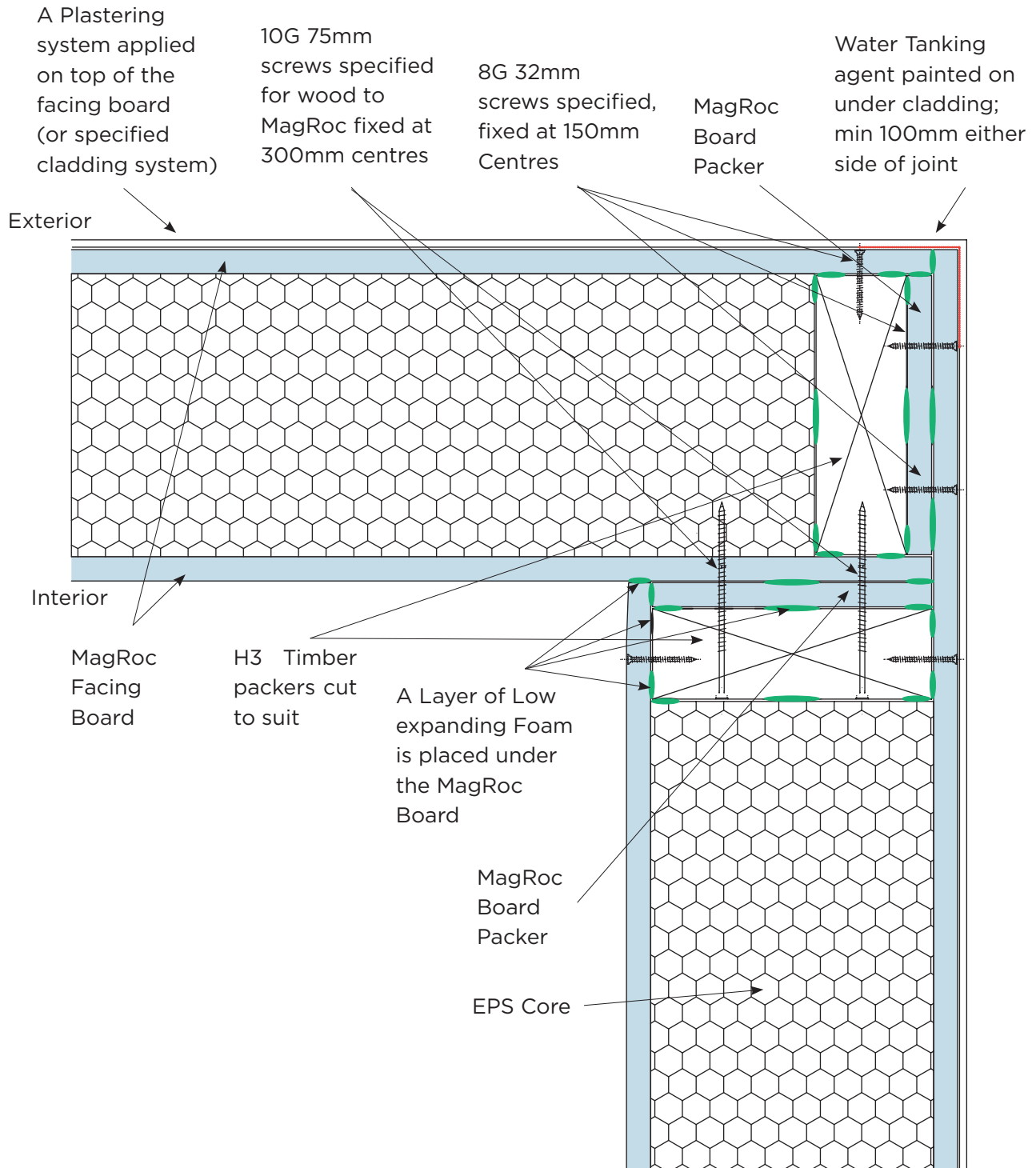
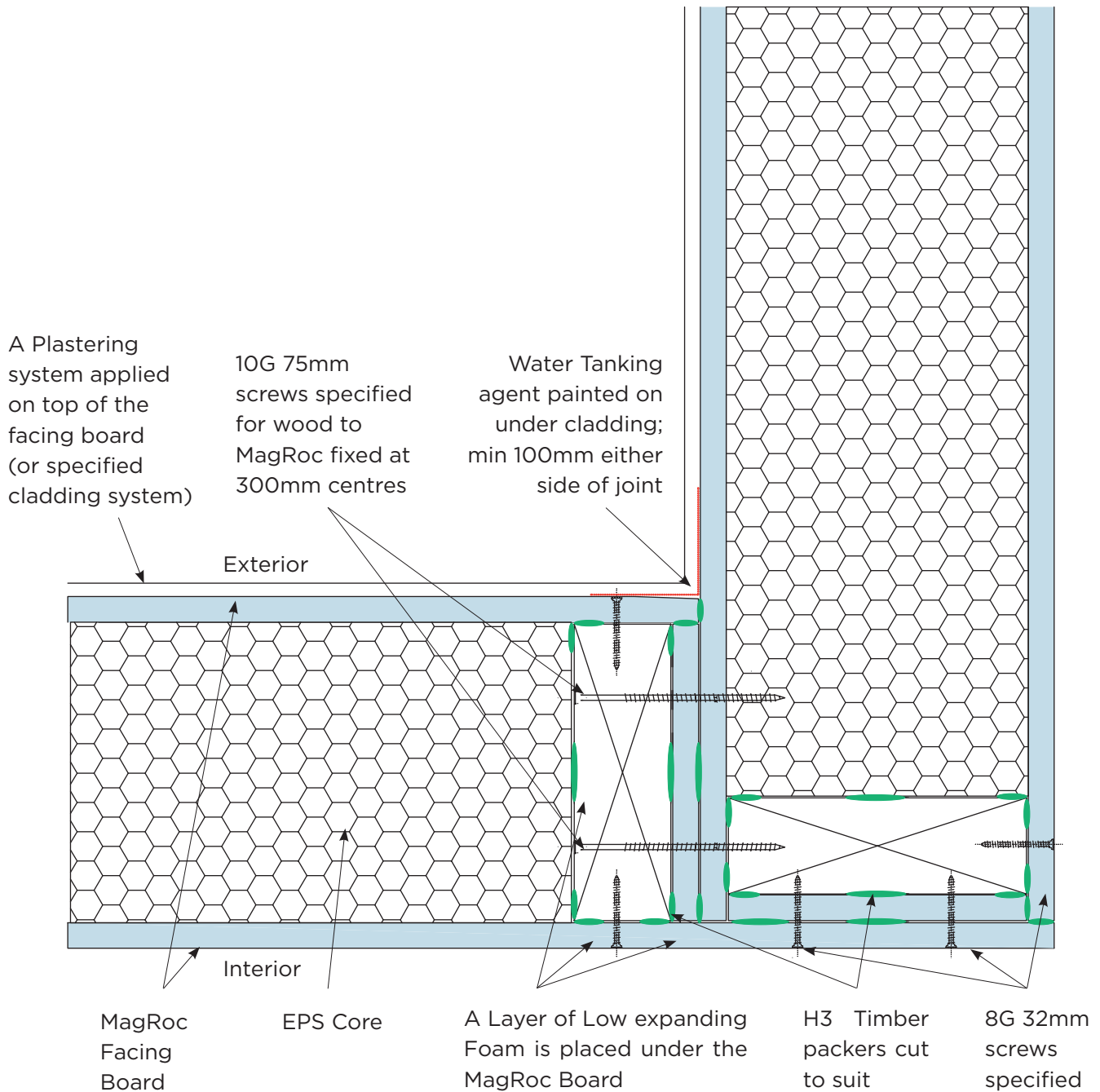


Fig 15.0 Installing Corner Panel 2

## Figure 16.0 MagRoc 'Typical' External Corner

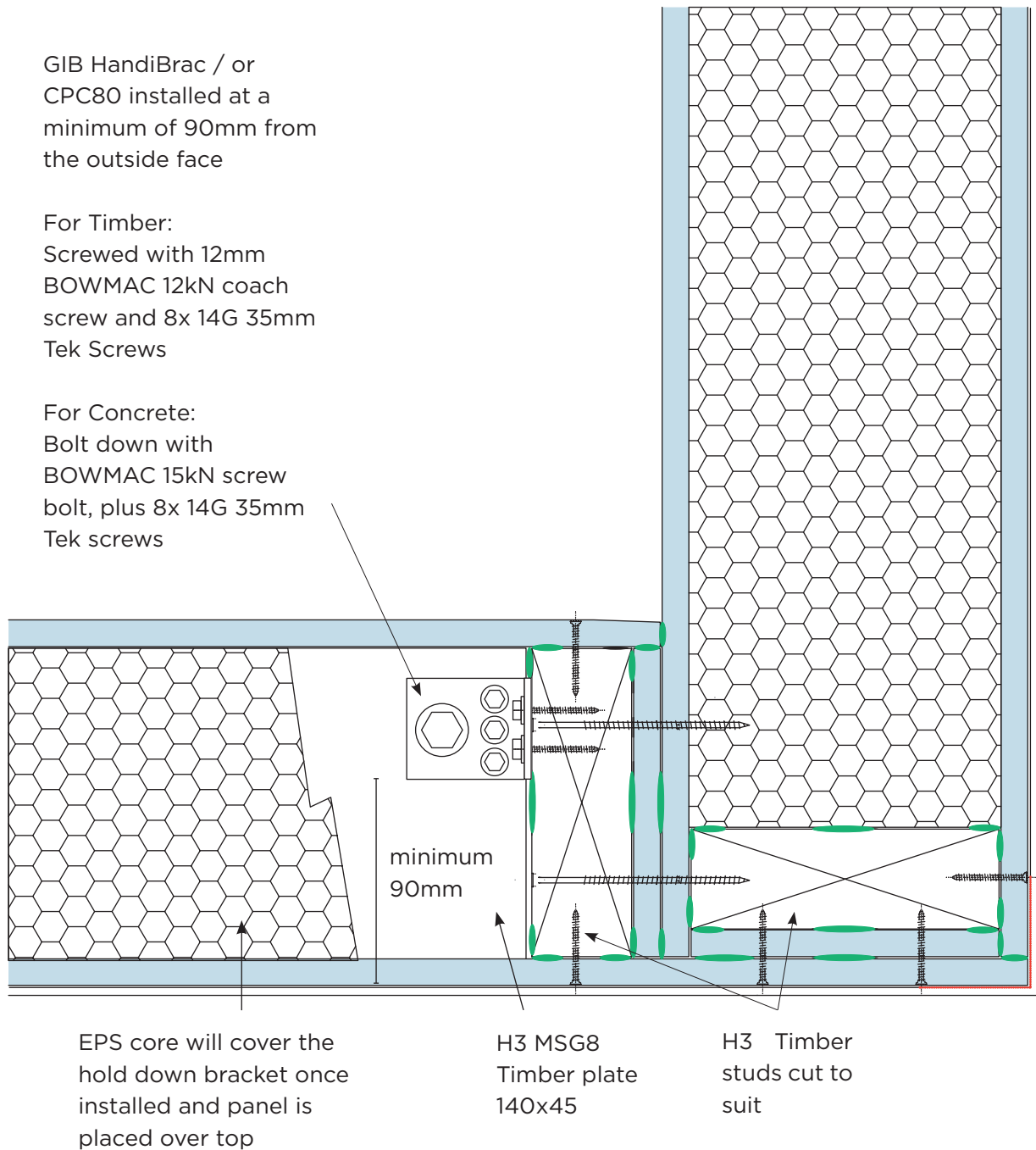


## Figure 17.0 MagRoc 'Typical' Internal Corner





## Figure 18.0 MagRoc 'Typical' Bracing Hold-down Bracket Detail



#### 8.4.4 Spline Connections

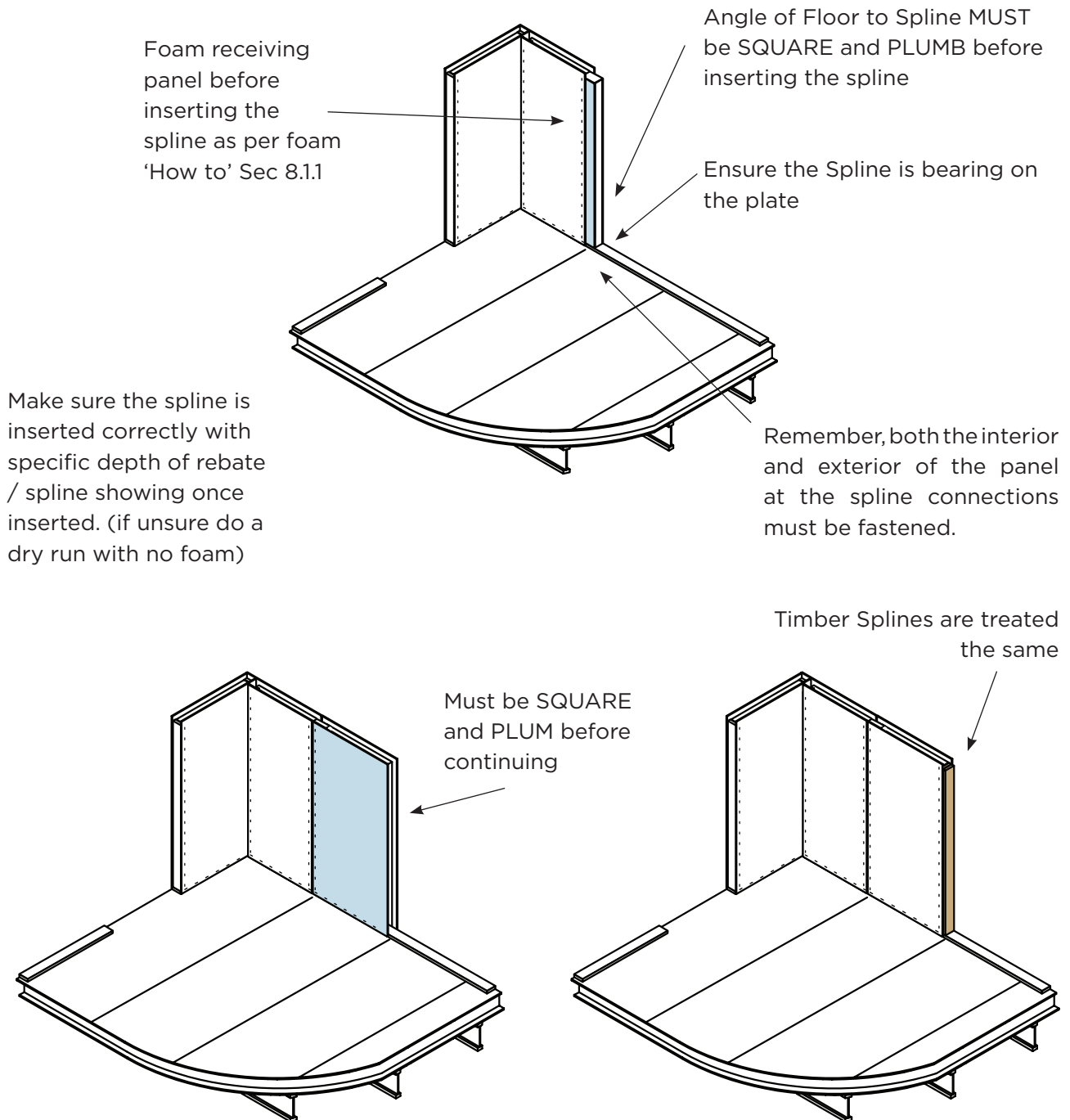


Fig 19.0 Installing Spline Connections

Continue to the next doorway, and then start again on the other side of the doorway. You can install the header panel over the doorway after all the full panels are in, or after the starting panel is installed. Header panels simply slide down but should be cut back by 4mm.

### 8.4.5 Headers and Spandrils

For doors and large windows (beyond one panel width) a MagRoc Header and Spandril may be needed. These are typically installed in combination with Timber studs & Box splines at either side of the opening which also act as fixing trimmer studs for the side of the door or window. A Spandril is treated like a normal panel except it gets its own top plate inserted.

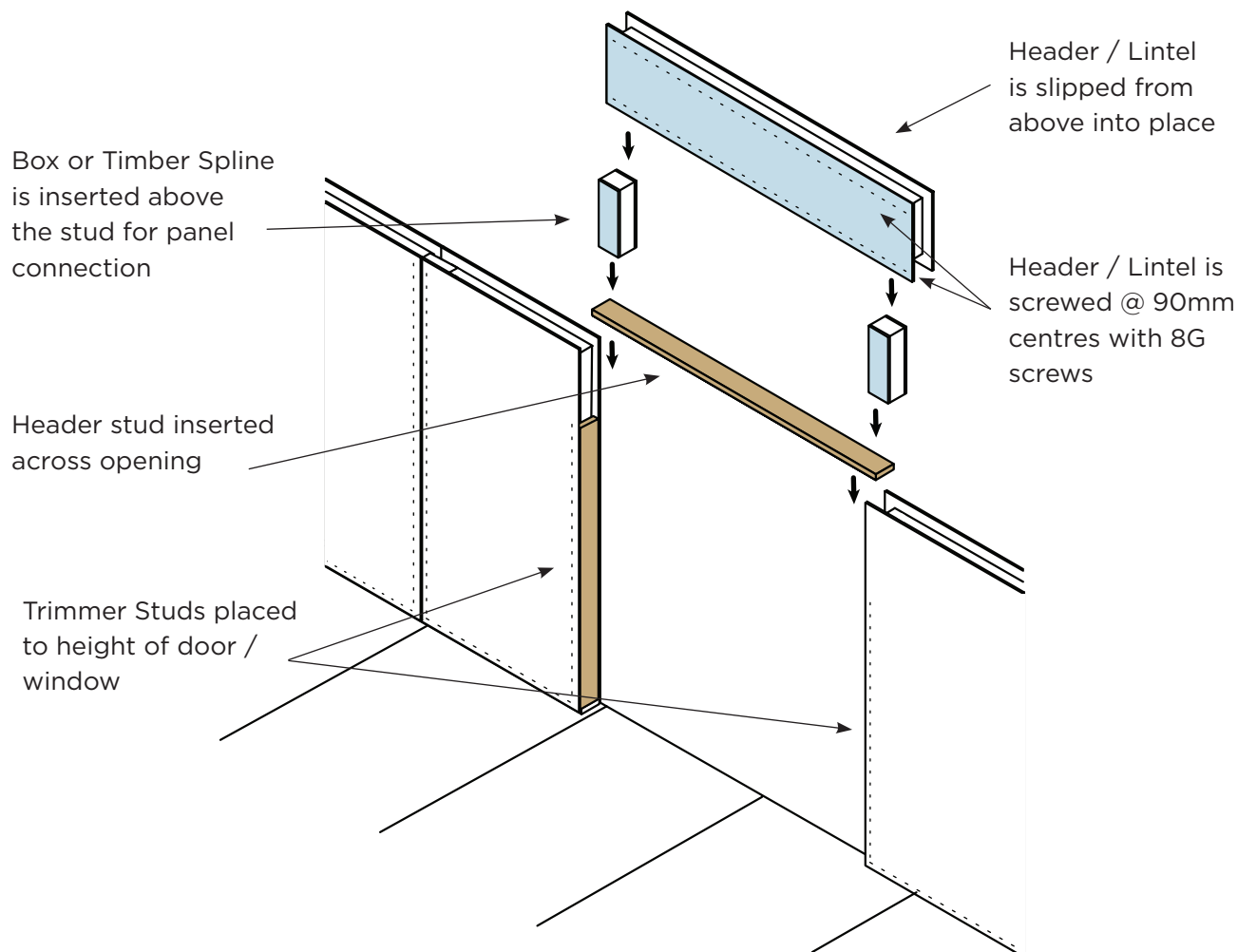


Fig 20.0 Installing Headers

#### Step by Step:

1. Create the rough opening by standing each panel either side
2. Place trimmer studs in flush with panels and up to the height of the lintel will be inserted
3. Place header stud in across the entire opening
4. Insert either Box or Timber splines above
5. Slide Lintel into place fix at closer 90mm centres with 8G screws.

## 8.5 Top Plate

The Top plate can be installed as you install the walls or completed once all the panels for that level are completed. There are different design details for the top plate depending on engineering requirements. The top plate can be either a single or double dimensional member recessed flush in the top of the SIP.

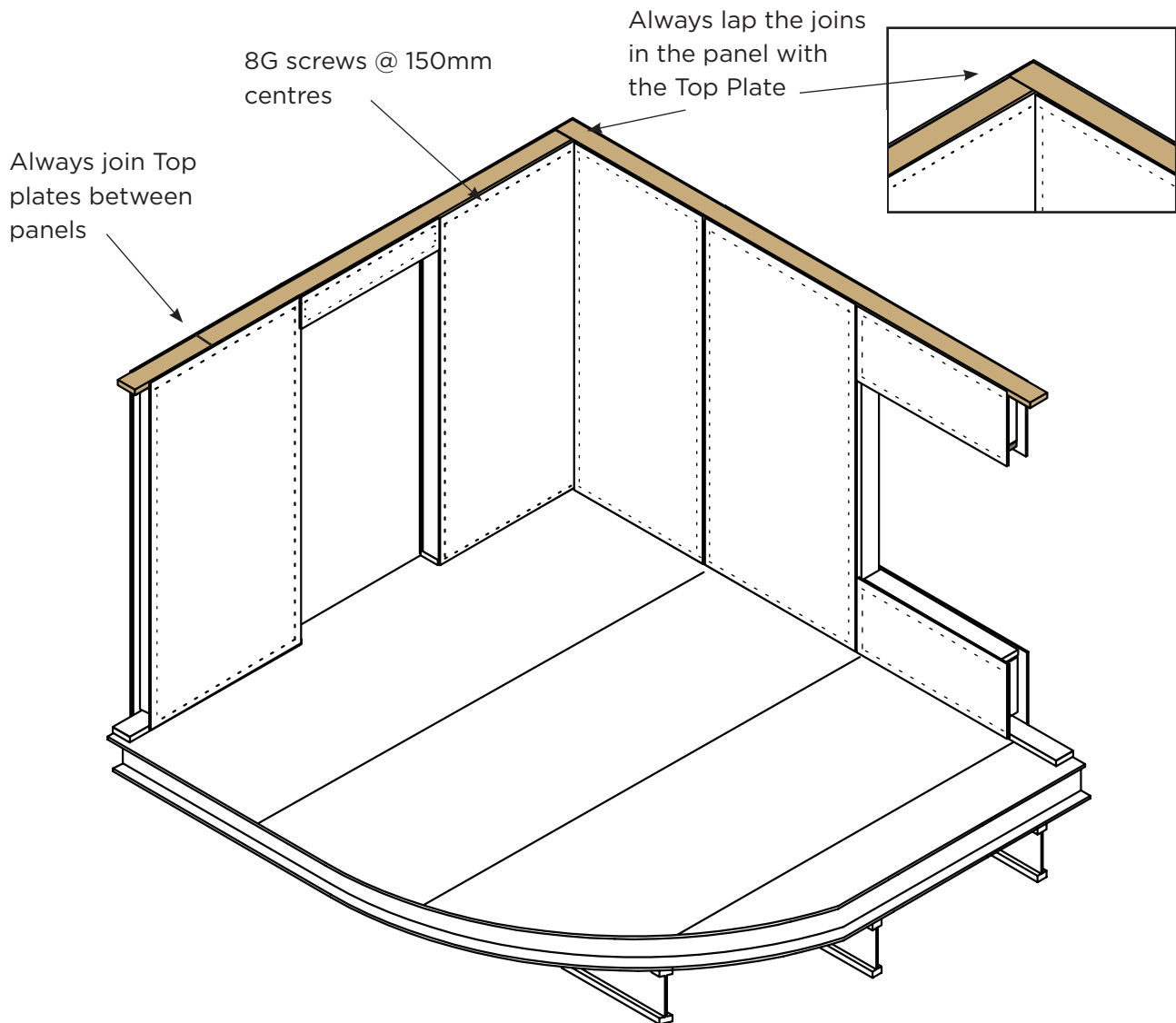
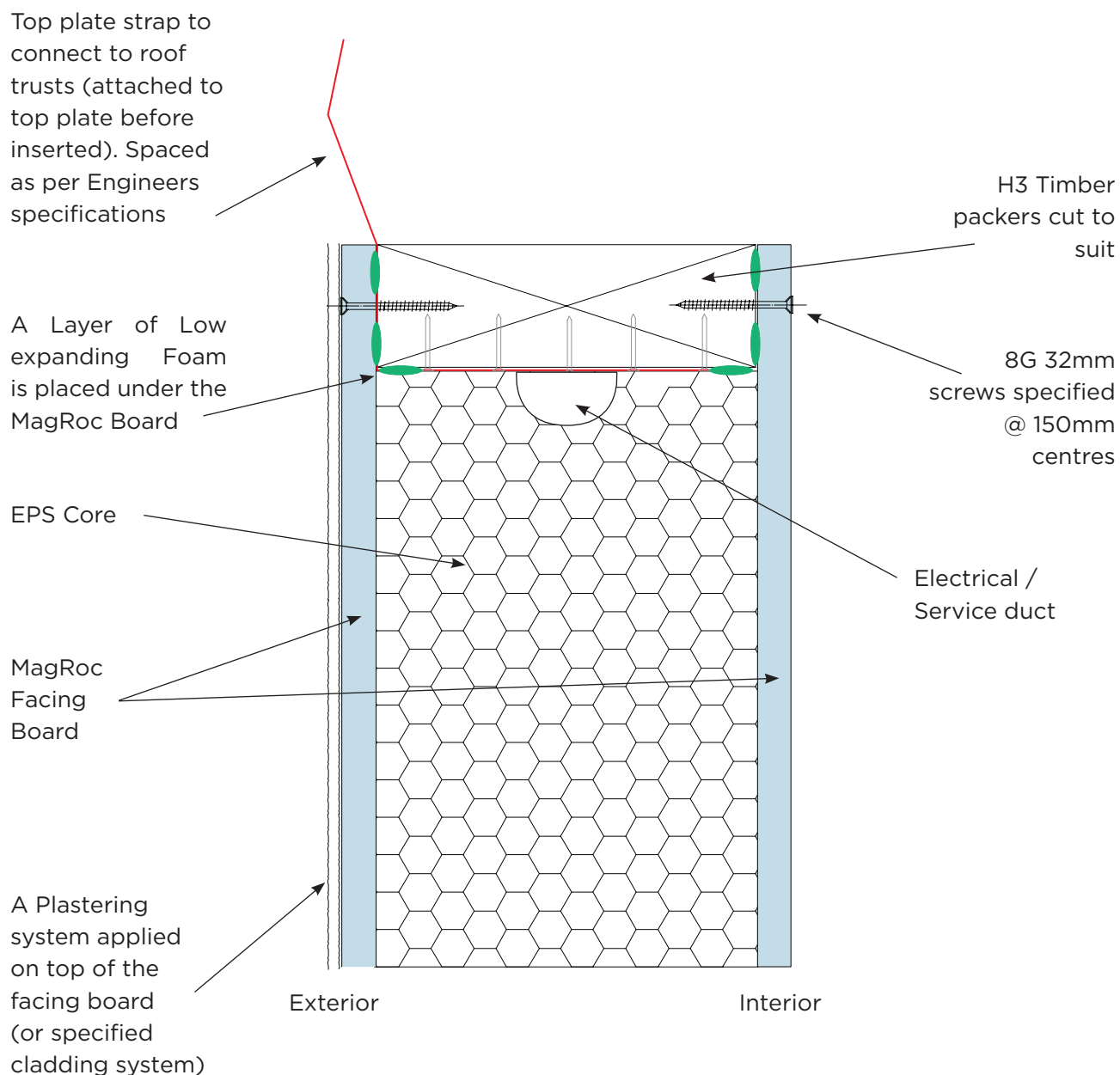


Fig 21.0 Installing the Top Plates

Check top surface of panel core for vertical wiring chases. Mark these positions on the top edge of the SIP skin for later drilling reference. The application of adhesive is the same as the bottom plate. Avoid placing joints in top plates at panel joint position. Join plates at mid panel. Once the plates are fastened it is time to drill the holes for the electrical chases. Use a jig to mark chase locations. Remember, the marks that were put on the floor at the time of bottom plate layout can be used as a reference.

## Figure 22.0 MagRoc 'Typical' Top Plate



## 8.6 2 Storeys / Stacking Walls / Mid Floor details

MagRoc SIP panels can achieve 2 floors of structure before a post and beam construction technique needs to be implemented. We can integrate our own MagFloor or traditional timber floor bearing directly on top of the ground floor MagRoc SIP panels. From this platform we are able to extend upwards and create the second story as shown in Figures 24-26 on the following pages.

For stacking walls the panels will be supplied with the proper recesses from the factory. They may require cutting for length. A Box spline will be supplied for the horizontal joint. These are supplied full length and can be cut on site.

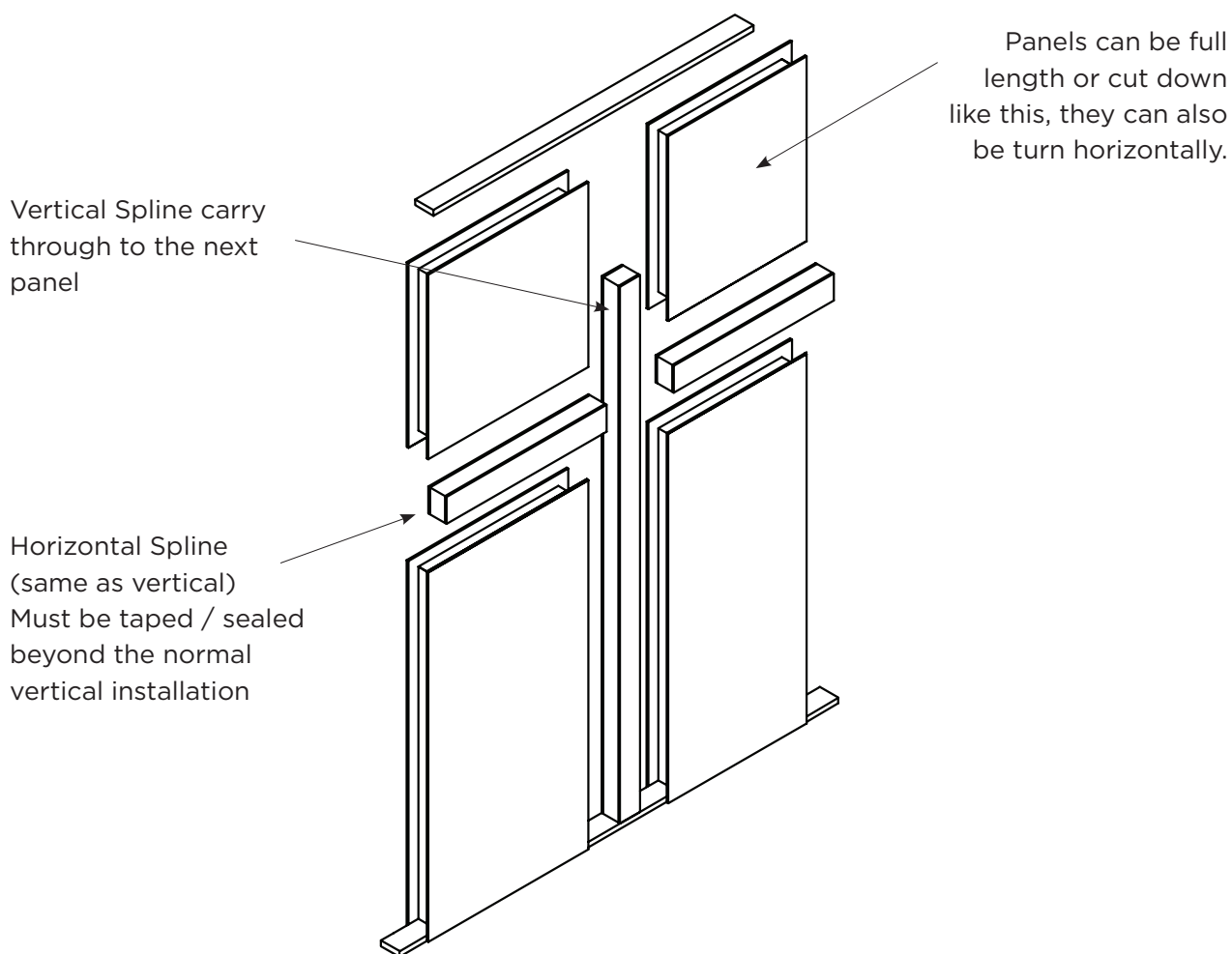
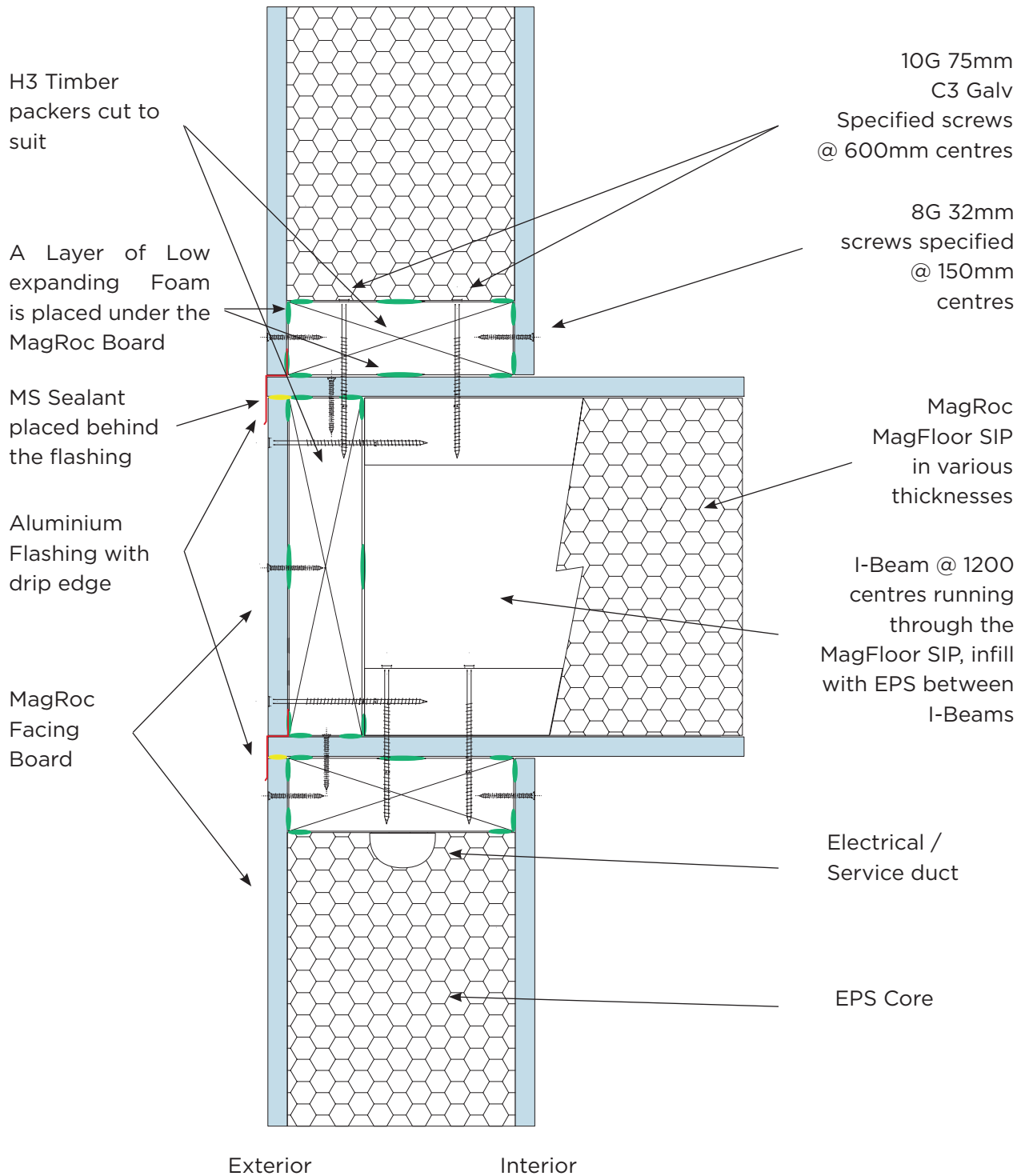


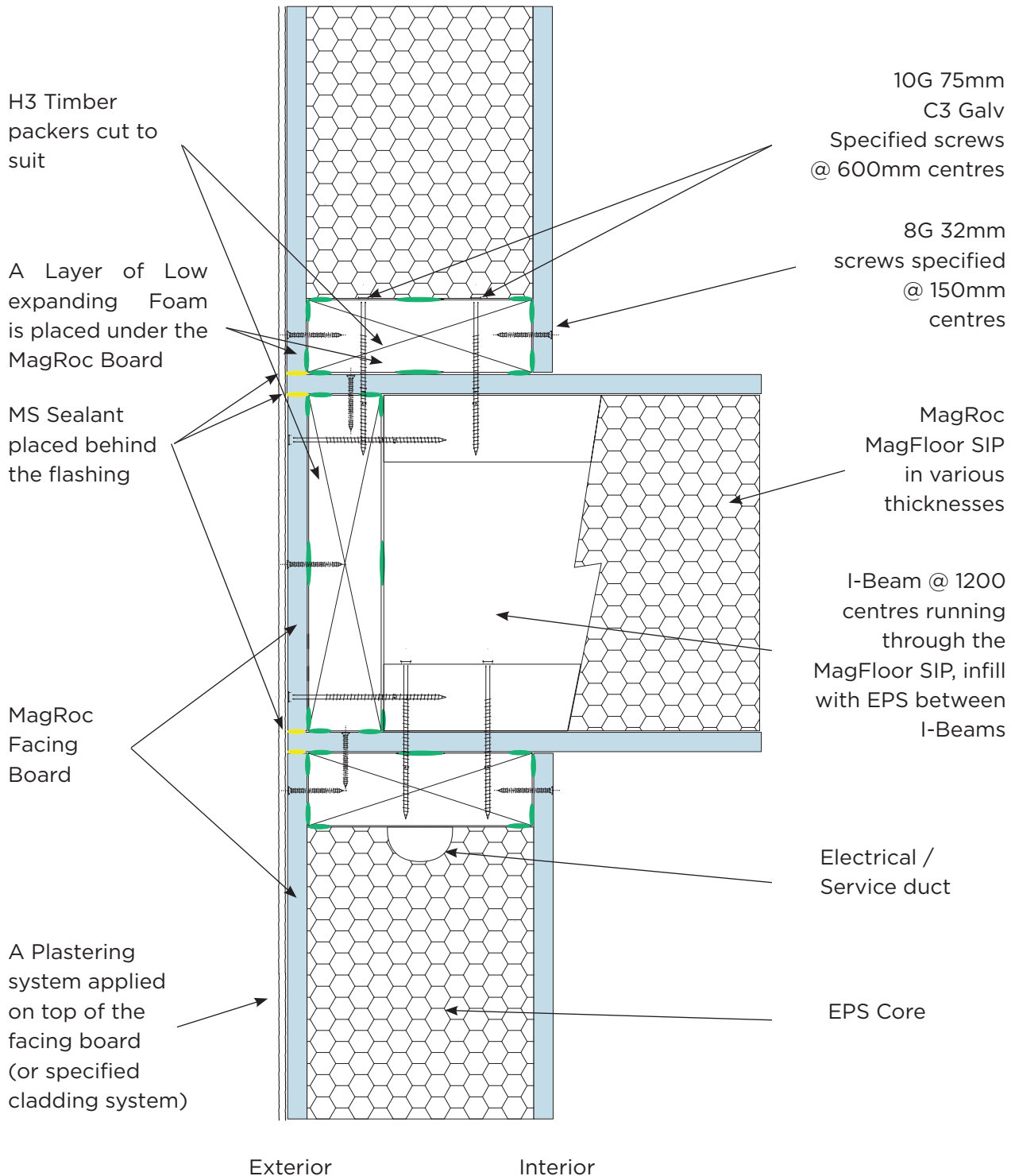
Fig 23.0 Stacking Panels

Adhesive patterns and fastening continues as per typical for vertical splines. Engineering will determine if a modified vertical spline will be required for these applications on an individual basis. As the height or number of window and door openings increase, the design strength is directed to the spline.

## Figure 24.0 MagRoc 'Typical' Mid Floor with Paint Finish

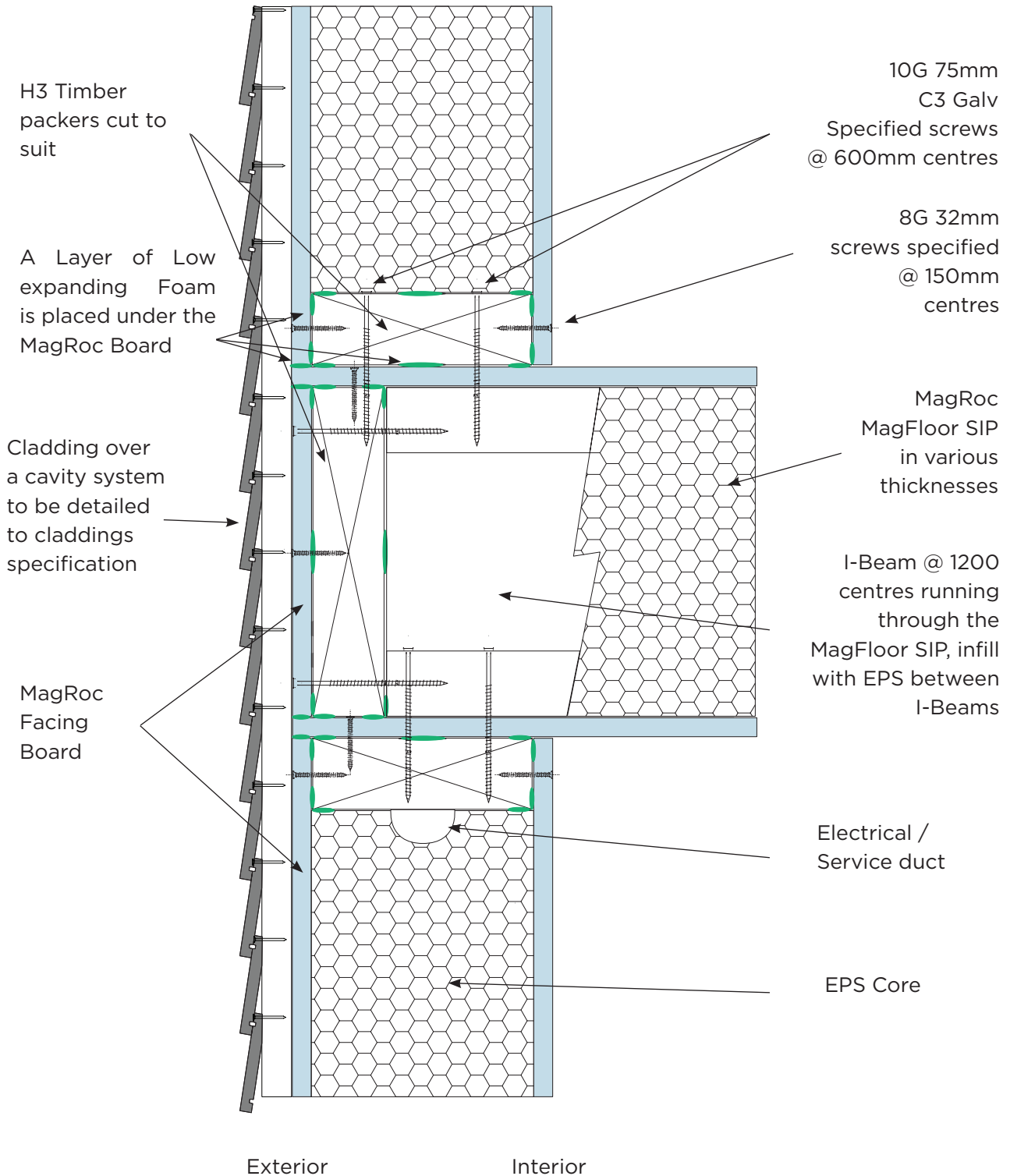


**Figure 25.0 MagRoc 'Typical' Mid Floor  
with Direct fix cladding**





## Figure 26.0 MagRoc 'Typical' Mid Floor with Cladding on a Cavity System



## 9.0 Panel Penetrations / Openings

### 9.1 Windows and Doors

All window and door rough openings (R/O) will be lined with MagRoc (no timber will be showing). They will therefore be inherently waterproof. It would be prudent to seal any exposed edges or sealant joints with an approved exterior joint paint membrane. E.g. Resene X200, SureShield, or Dulux TotalPrep.

#### Step by Step for Preparing the Rough Openings:

(If you have preformed openings then you will ignore these steps)

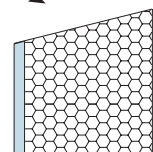
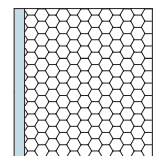
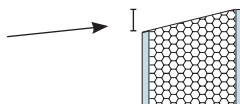
Step 1 Mark windows / door R/O on the inside of the SIP panel

Step 2 Drill corners of R/O to transfer to the outside of the panel  
(ensure your drill is level and straight)

Step 3 Mark the outside and cut both sides as deep as possible

NOTE: For rebated windows with 20 degree sills, mark the outside bottom and cut it lower than the inside by:

165mm SIP = 56mm  
215mm SIP = 74mm  
265mm SIP = 92mm  
315mm SIP = 110mm



This bottom sill cut should be cut with a 20 degree angle set on the saw

Step 4 Use reciprocating saw to finish the cut if the EPS is too thick for the skill saw.

Then remove the cut panel.



Step 5 Use the Hotknife to rebate the EPS on the Head / Jam by 58mm

NOTE: Sill will vary if Rebated or Face Fixed refer to each section





Step 6 Use foam adhesive and screw fix the timber head and jamb trimmers in place at 150mm centres, set back 12mm inside the R/O.

Step 7 Place 12mm MagRoc in the rebates with foam adhesive and brad gun the MagRoc Board to the timber trimmers at 150mm centres also.



Step 8 Trim off all excess foam adhesive when cured and prime joints and MagRoc Board edges with approved primer / sealer.

**This MUST be carried out for all openings unless specified in the engineers detailings.**

MagRoc are able to supply the pre-formed timber sills for rebated and facefixed windows and doors upon request and the MagRoc Board for the openings. This must be organised prior to shipment of the panels to site.

## 9.1.2 Rebated Window Details

For rebated windows there is some **specific details to follow for the Sill** as seen below. Please use this as a general guide for installation but refer to your engineering drawings for specific details.

### Step by Step for 'Typical' Rebated Windows



- Step 1      Ensure you have cut the outside edge lower then the inside edge for the 20 degree sill to sit on. (see step 3 in section 9.1)
- Step 2      Scoop out 140 x 45mm sections across the panel as 400mm centres
- Step 3      Scrape out all EPS and cut timber blocks to fit the sections (do not fix in place at this stage). Ensure the side jambs drop below timber blocks.



- Step 4      Cut your pre-formed window sill to length attach to the timber blocks
- Step 5      Foam the sill along both edges and inside the scooped holes and drop the sill in place and screw fix in place with 2 screws per block front and back.
- Step 6      Coat sill (and entire opening) in joint primer ensuring all joints and edges are covered.





- Step 7      Place MagRoc 15mm trimmers in place to fix the window reveal to.
- Step 8      Use approved joint primer seal all battens completely around the opening
- Step 9      Insert the window and pack out if necessary
- Step 10     Silicone seal the head and prepare for plaster finish flashing to be placed on.



- Step 11     Place plaster companies flashing on the window and fix in place.
- Step 12     Seal the back of the window by inserting foam the entire way around.
- Step 13     Finish to architects details with architrave or cap

## Figure 27.0 MagRoc 'Typical' Rebated Window Sill

Specified design MagRoc preformed Sill glued and fixed to the timber packer with 8G 32mm screws specified

NOTE: Min 6mm gap needed between sill tray and window framing

Joint Primer painted on and sealing the sill where the Red line is indicated

A Layer of Low expanding Foam is placed under the MagRoc Board

A Plastering system applied on top of the facing board (or specified cladding system)

MagRoc Facing Board

Aluminium Window compliance with NZBC

Approved Air Seal to edge of Aluminium with 7mm minimum gap between sill and window reveal

Window Timber packer cut to a minimum 15' Degree slope

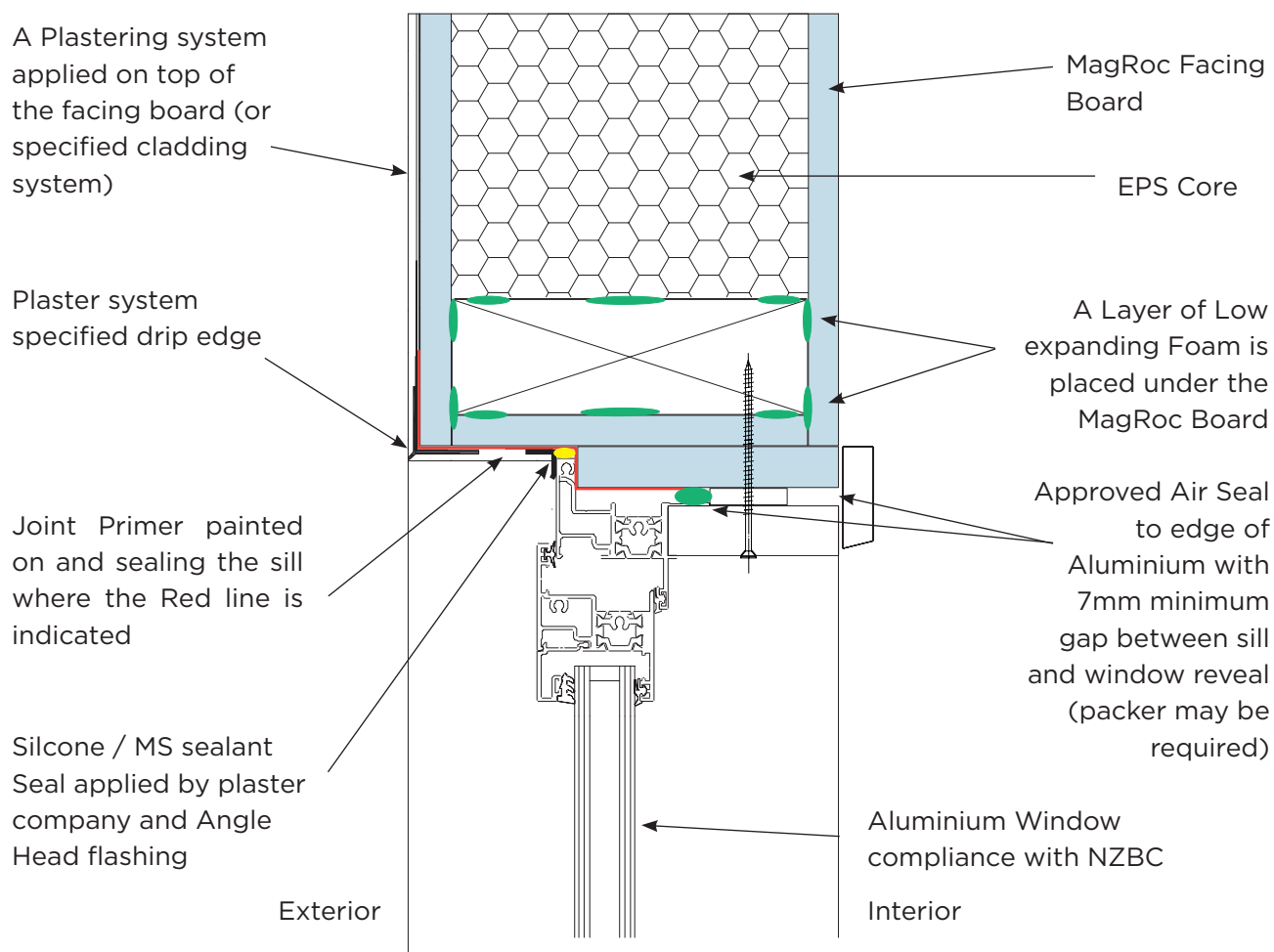
EPS Core

MagRoc Facing Board

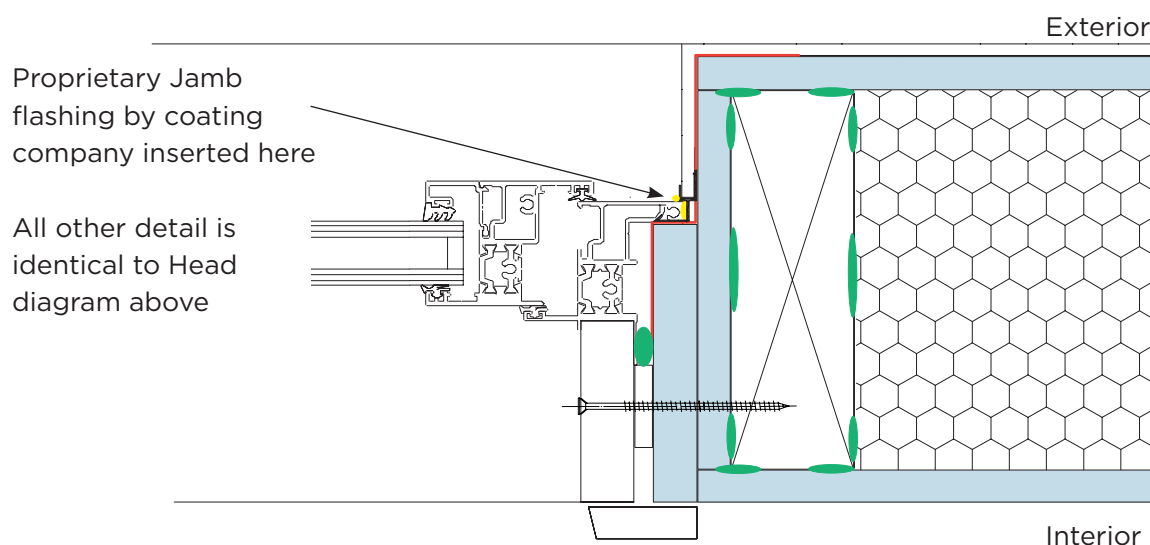
Exterior

Interior

## Figure 28.0 MagRoc 'Typical' Rebated Window Head



## Figure 29.0 MagRoc 'Typical' Rebated Window Jamb



### 9.1.3 Face Fixed Window & Door Details

Window and doors shall be screw fixed using Stainless steel or class 3 Galv 8G screws. All screw fixing through the joinery frame shall be sealed with an approved MS sealant. Joinery shall be fixed on purpose made polypropylene packers which will support the joinery and ensure a minimum 7mm space is provided between the waterproofed 'rough opening' and the joinery unit. This minimum 7mm space is essential for the installation of an effective 'air seal' with a PEF rod and MS sealant.

#### Step by Step for a 'Typical' Face Fixed window:

Step 1: Seal and prep the window sill



Step 2: Place / Glue Sill tray in place



Step 3: Seal all connections



Step 4: Insert window with 7mm gap



Step 5: Insert PEF rod into Head and Jamb ONLY



Step 6: Fix window in place / Silicone Head & Jamb



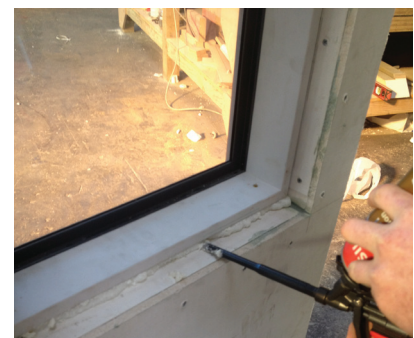
Step 7: Smooth out the silicone to seal entirely



Step 8: Apply Head flashing and flashing tape

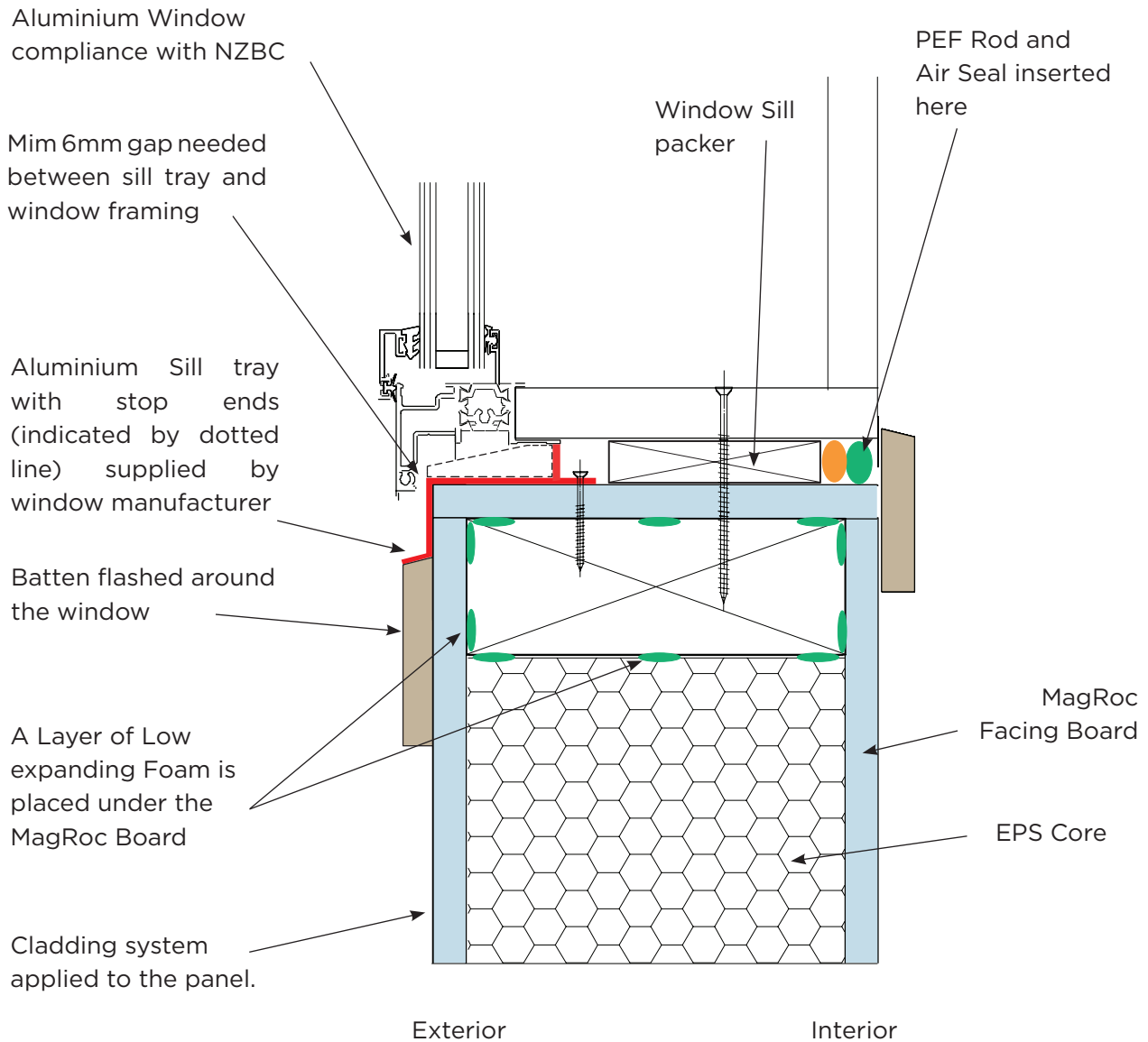


Step 8: Create 'air seal' in the back of the window

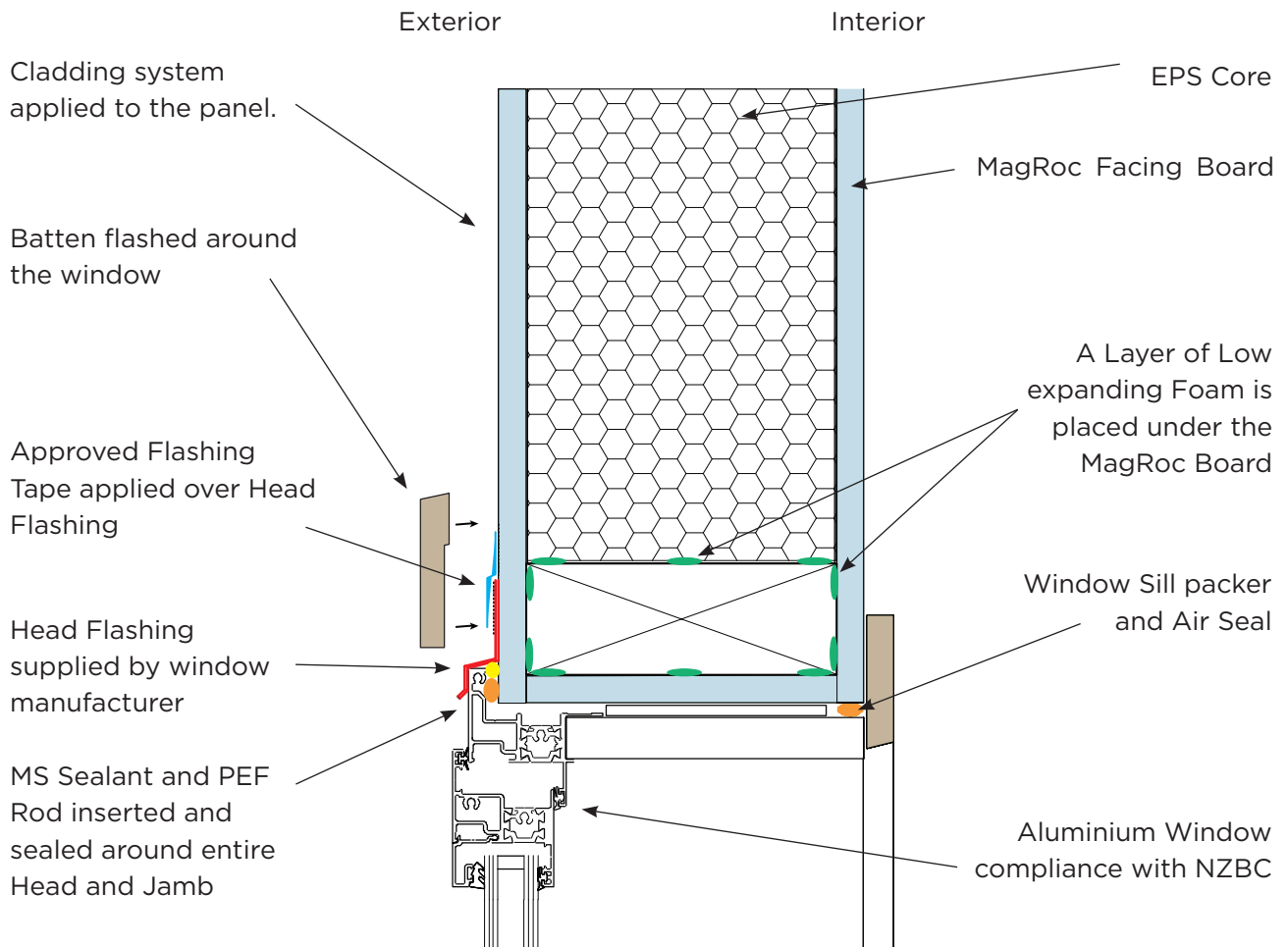




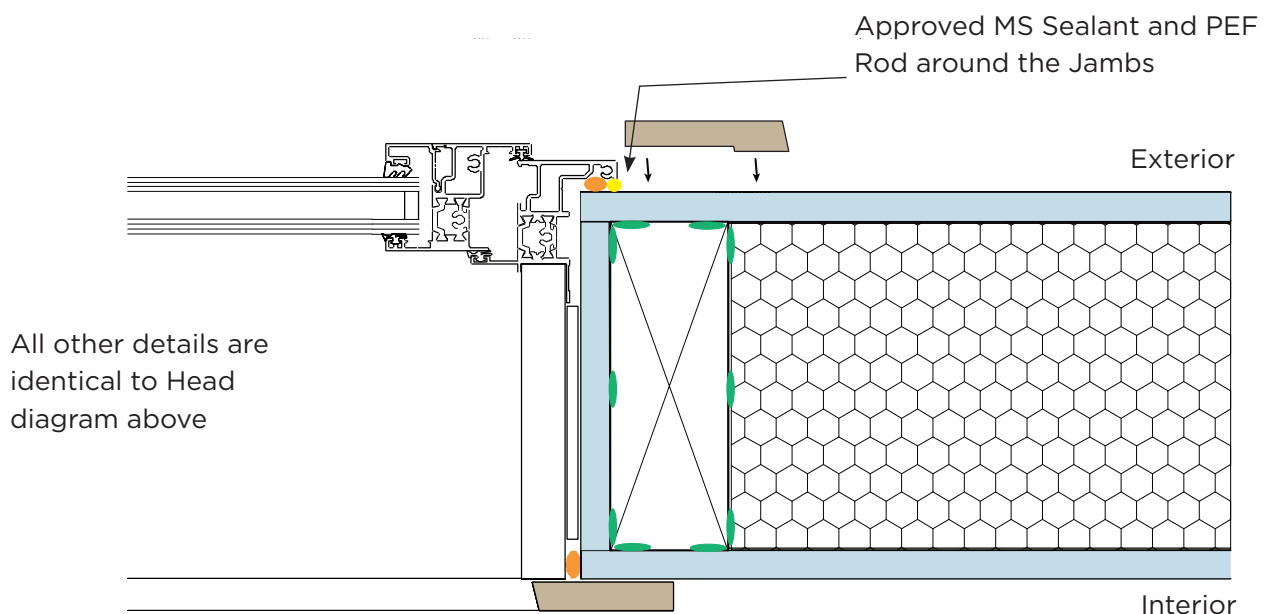
## Figure 30.0 MagRoc 'Typical' Facefixed Window Sill



## Figure 31.0 MagRoc 'Typical' Facefixed Window Head



## Figure 32.0 MagRoc 'Typical' Facefixed Window Jam



## 9.2 Exterior Penetrations

### 9.2.1 Pipe / Exterior Penetration Detail

All plumbing, electrical, security, heating, and sundry penetrations through the exterior of the SIP must be adequately sealed. It is best trade practice to ensure the penetration has a 5' Degree fall minimum from the inside at all times. This ensures no water can travel up the pipe or wire into the structure.

MagRoc strongly suggest the use of ProClima Roflex and Kaflex grommets for an effective solution to sundry penetrations, and flashing tapes over larger penetrations. visit [www.proclima.co.nz](http://www.proclima.co.nz).

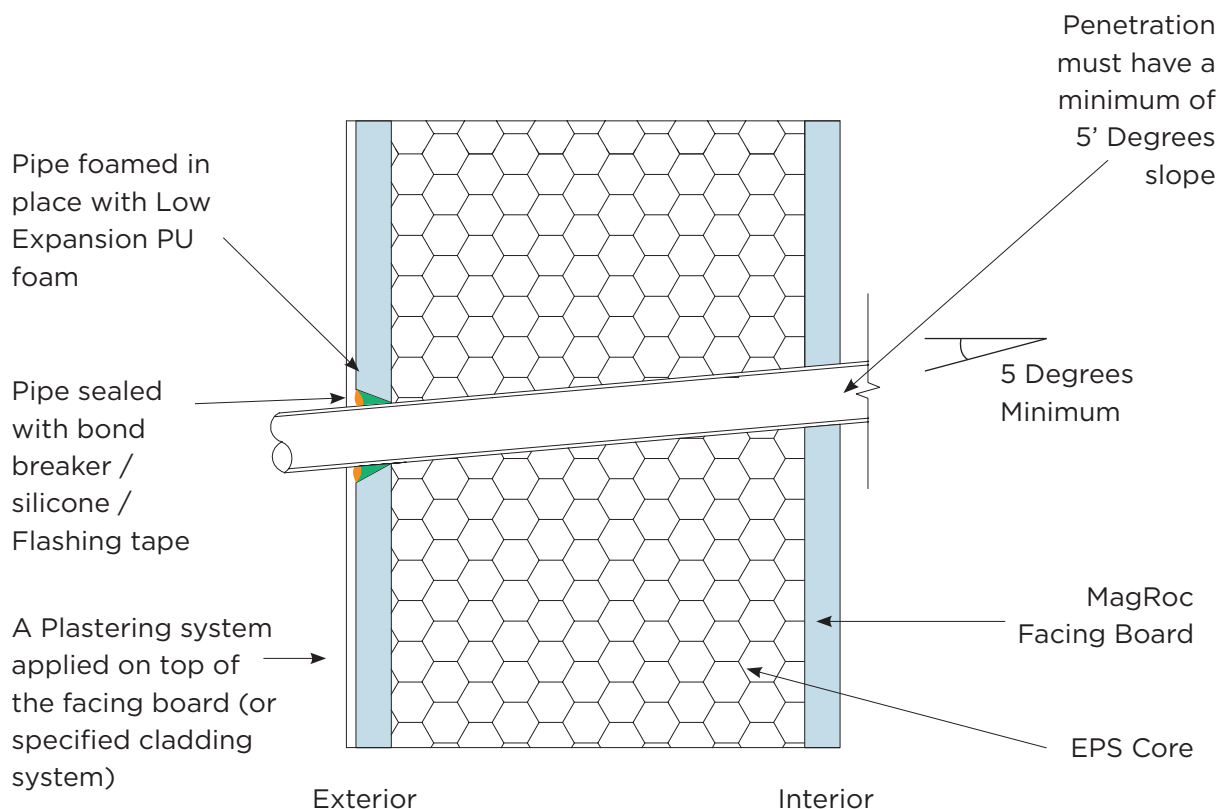


Figure 33.0 - Pipe Penetration

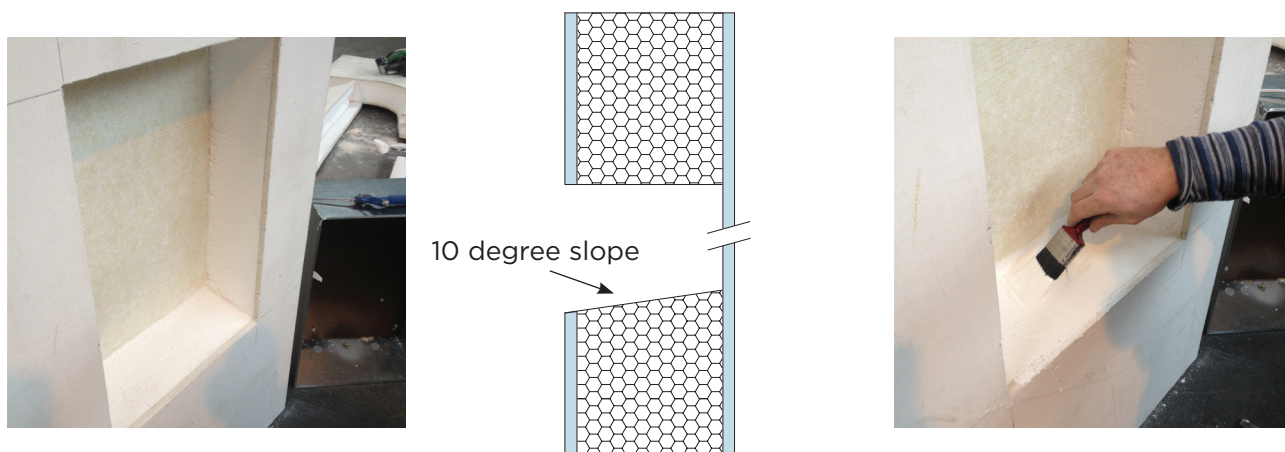
**Please only use this as a basic guide, and follow the exterior products own sealant requirements above and beyond the diagram above.**

### 9.2.2 Meter Box Details

The meter box is something every MagRoc house will have but holds its own complications when installing as unlike a window or door you are not penetrating all the way through the back wall / board. We have come up with a simple but easy way to solve this complication with a drained cavity Meter Box face fixed using our own unique flashing system.

To make the installation of the meter box as simple as possible we recommend using Resene X200 water sealant paint to cover the entire opening. This will act as your secondary defence against water penetration in the EPS and board, behind a specifically developed MagRoc flashing system.

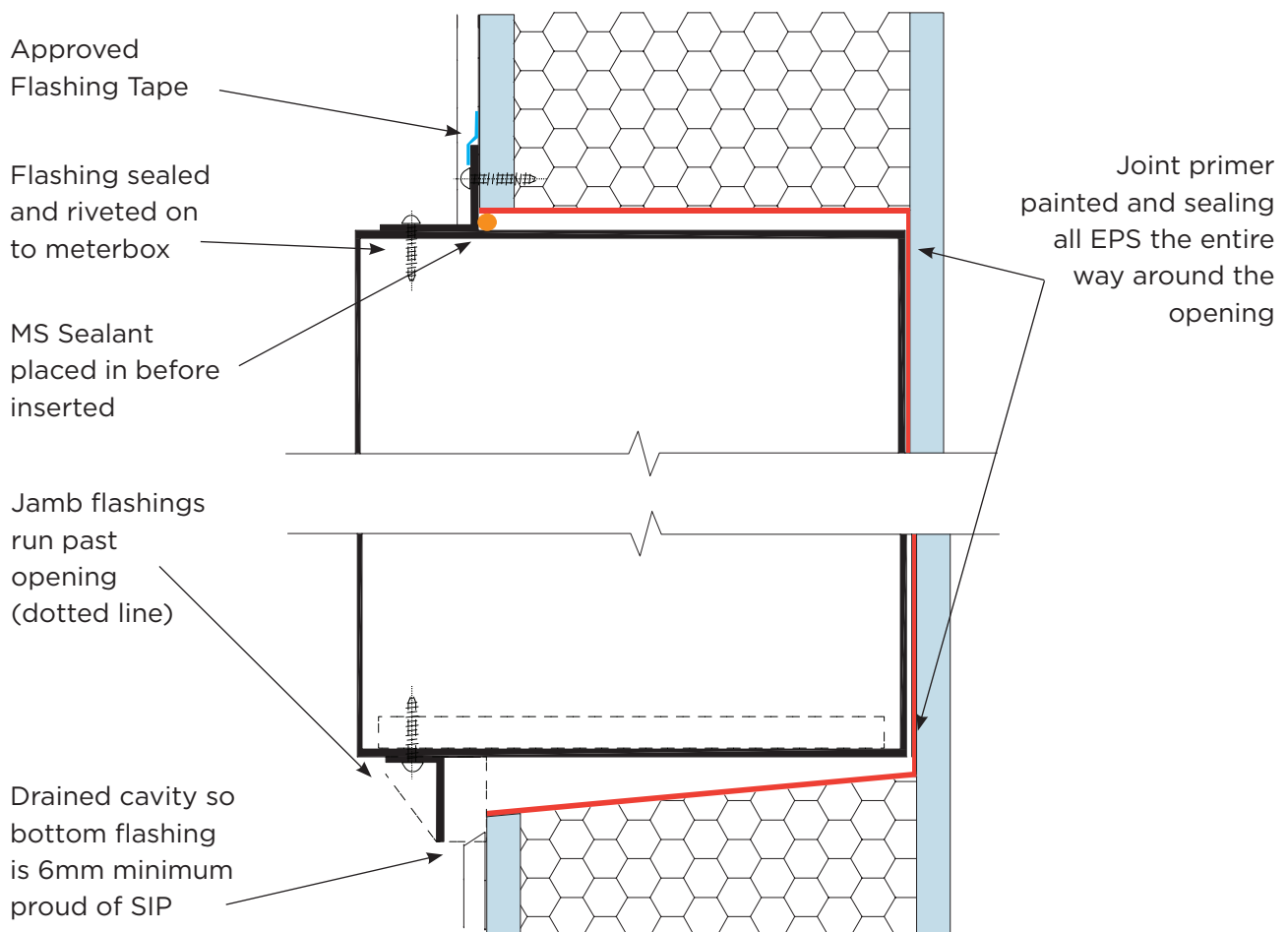
The trickiest detail to see in the drawings is the 6mm cavity created at the bottom of the box. This is done by placing the bottom flashing FORWARD on the box when compared to the jamb flashings which run past the bottom flashing. See the diagram and picture below:



- Step 1      Mark the meterbox size on the outside of the SIP, allowing 15mm extra on the Head and Jamb, and sloping the Sill with an extra 25mm clearance.
- Step 2      Ensure you square cut the Head and Jamb but create a 10 degree slope on the Sill
- Step 3      Remove all the EPS to the back skin, this will create a slightly larger cavity for your O/A Meterbox.
- Step 4      Seal the cavity with approved primer sealer (i.e. Resene X200)



- Step 5 Seal and fix Sill, Jamb and Head flashings to the meterbox. Ensure Sill flashing is 6mm proud of the finished SIP. This gap will be left unsealed ensuring water egress.
- Step 6 Using aproved MS sealant, fix the meterbox back firmly to the SIP face
- Step 7 Flashing tape can be used to over seal the flashing / SIP joint, then over lap cladding



**Figure 34.0 - MagRoc Meter Box**

## 10.0 Roofs and Floors

MagRoc Structural insulated wall and roof panels are the future of residential and commercial construction. MagRoc SIPs make roofs, ceilings and floors easy and economic to build, and extremely energy efficient. Panelized construction not only speeds construction but also significantly increases job site safety. The panelized roofs are a structural panel incorporating an engineered beam. The warm roof and floors are a thinner panel fixed directly over floor joists, roof purlins or other structural components.

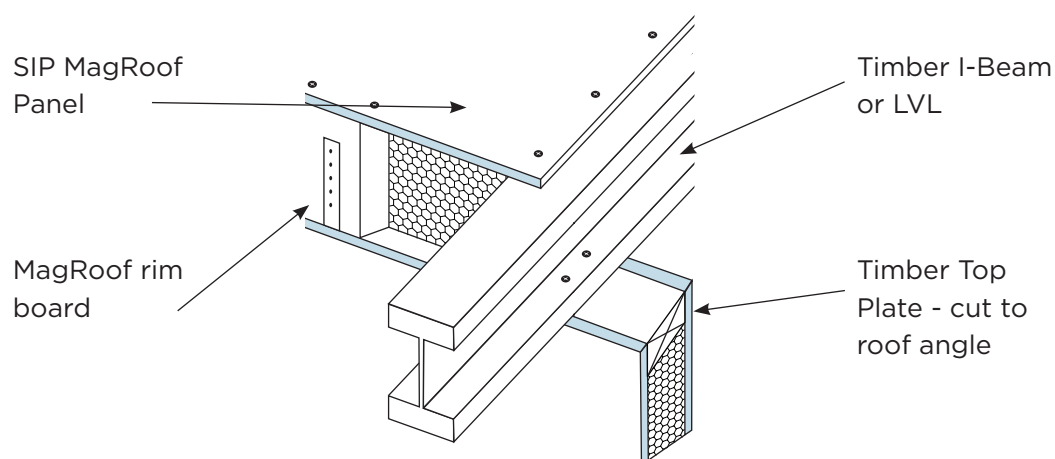
Panels use appropriate length screws to attach to walls, beams, trusses, joists or purlins. Screws are normally at 300mm centres along the bearing member. The use of SIP panel roofs and floors in conjunction with SIP panel walls will create a much more energy efficient structure than any of the systems alone. The structure will become very airtight and easily achieve energy savings of 50%+ over the similar conventional construction.

### 10.1 Roofs

SIP's can be installed as the roof structure or simply as an insulated ceiling under truss's or ceiling joists. Cathedral or sloping ceilings add height to a space and allow the wall panel to be constructed with a lower stud height.

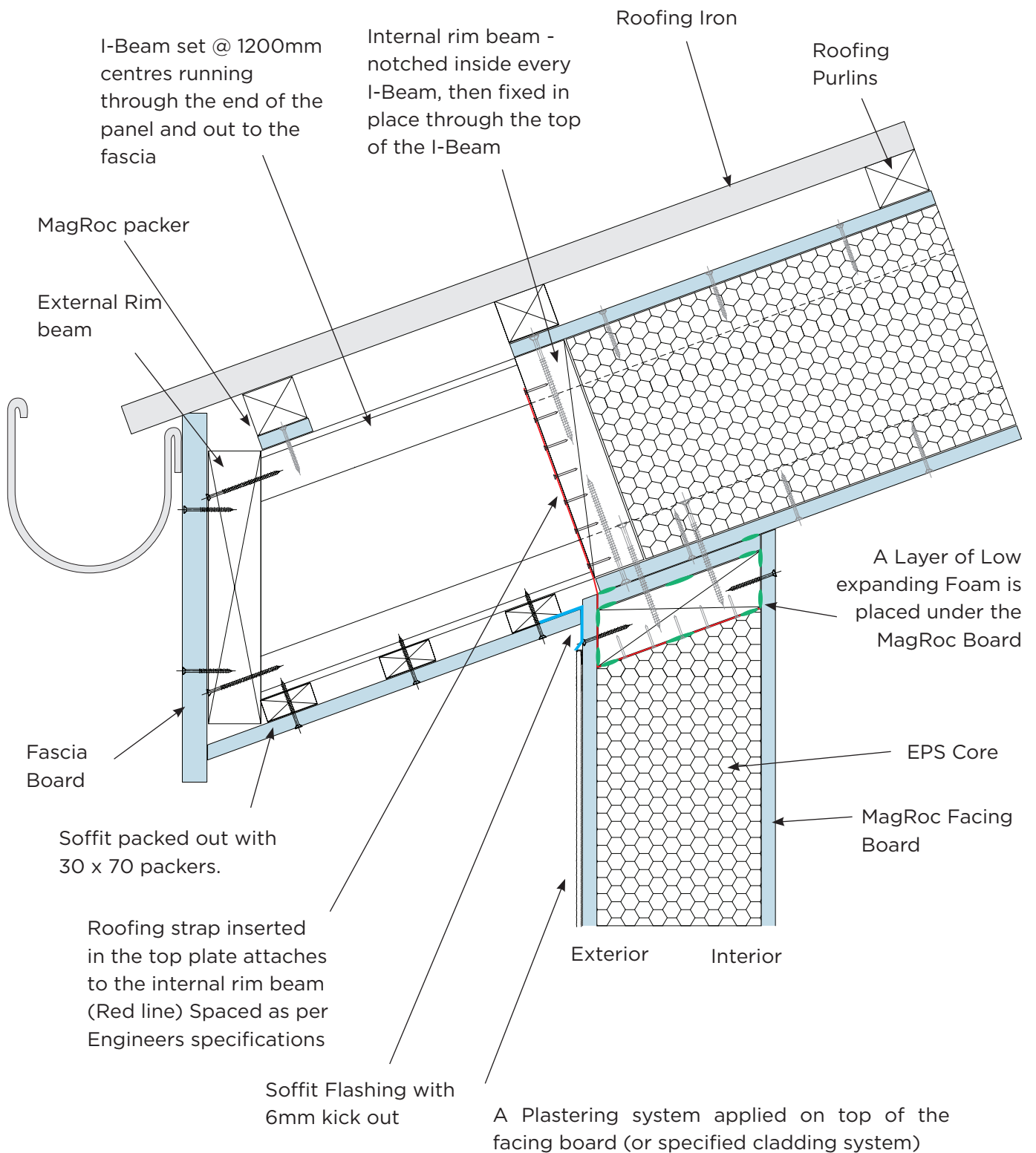
#### 10.1.1 Structural Roof SIP's (MagRoof)

SIP's inherent advantages of economy, strength, insulation and speed are no more apparent than in a cathedral/sloping ceiling design. Mono-pitch roofs are probably the quickest roofing method and result in an aesthetically modern appearance. The additional roof space provided by a cathedral ceiling can be used for additional mezzanine floor area. Large roof spans of MagRoc panels are usually incorporated with engineered timber beams installed in the same manner as a wall panel spline.



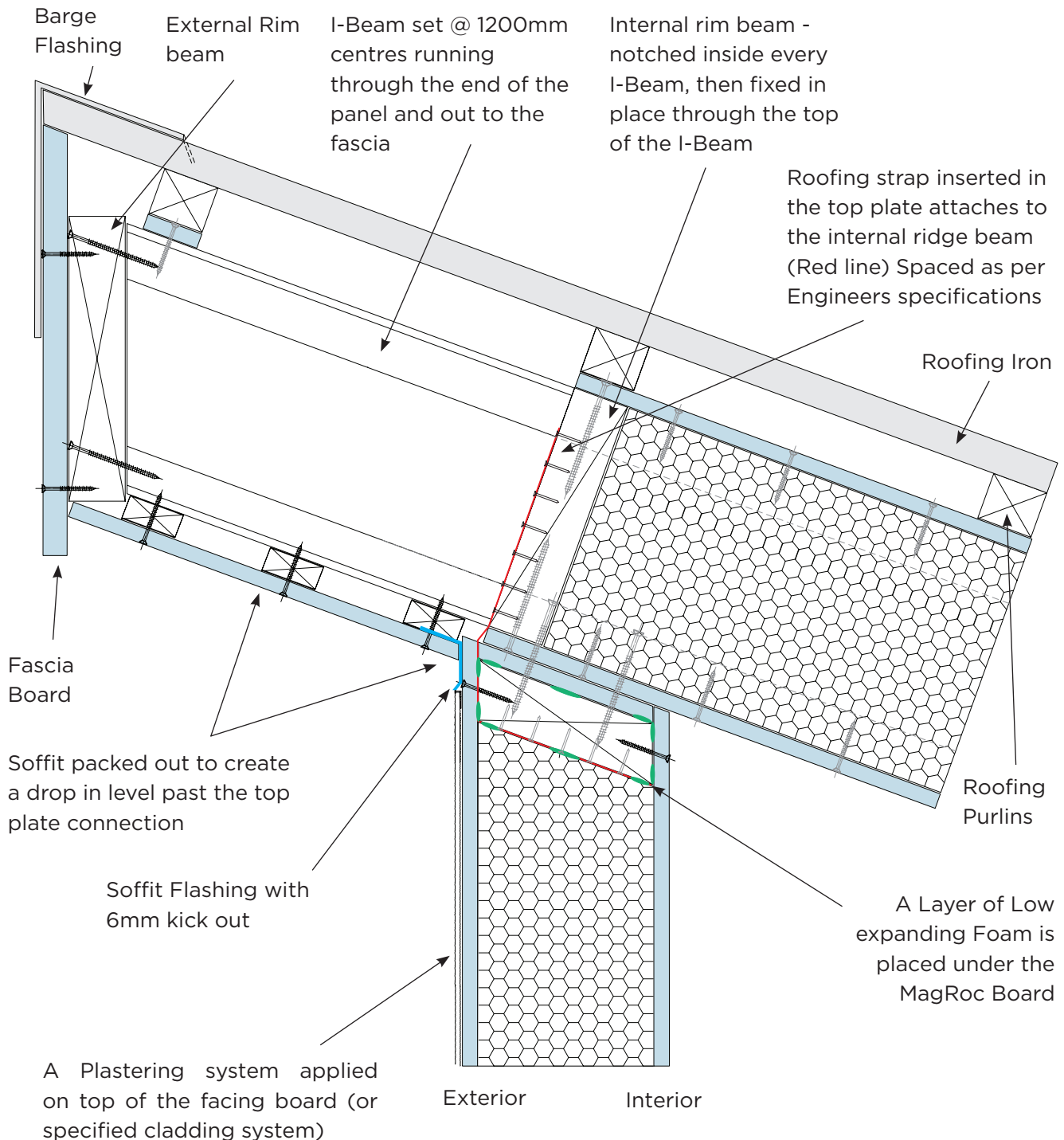
The edges of hip and valley panels need to be supported with valley and hip rafters/beams. Metal strapping can be used where roof panels meet walls for extra connection strength. Top plates are cut and fitted to the pitch of the roof giving good bearing of the roof panel on the top plate.

# Figure 35.0 MagRoc 'Typical' MagRoof base to Angled Soffit 90' - 65'



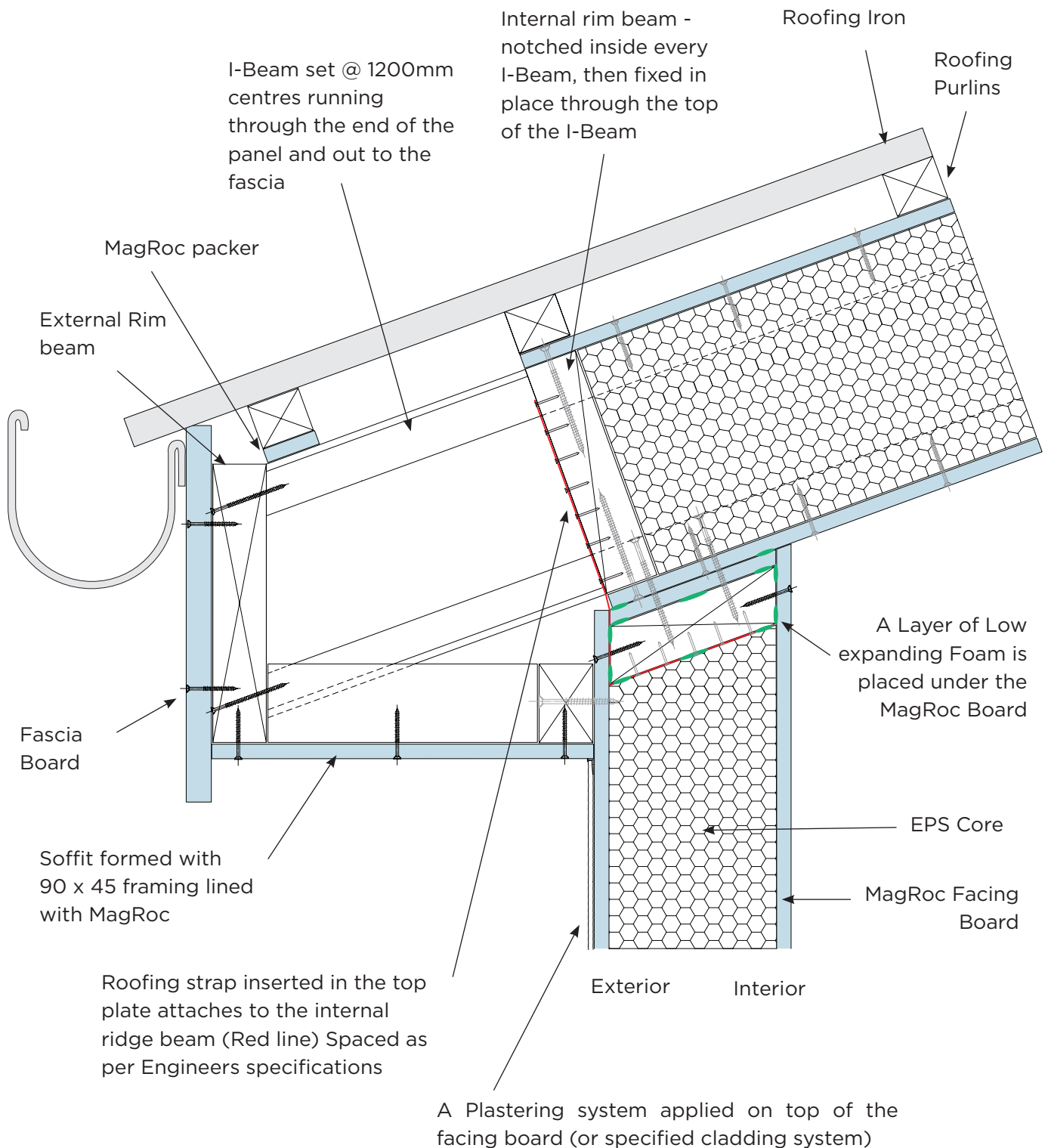


# Figure 36.0 MagRoc 'Typical' MagRoof top to Angled Soffit 91' - 115'

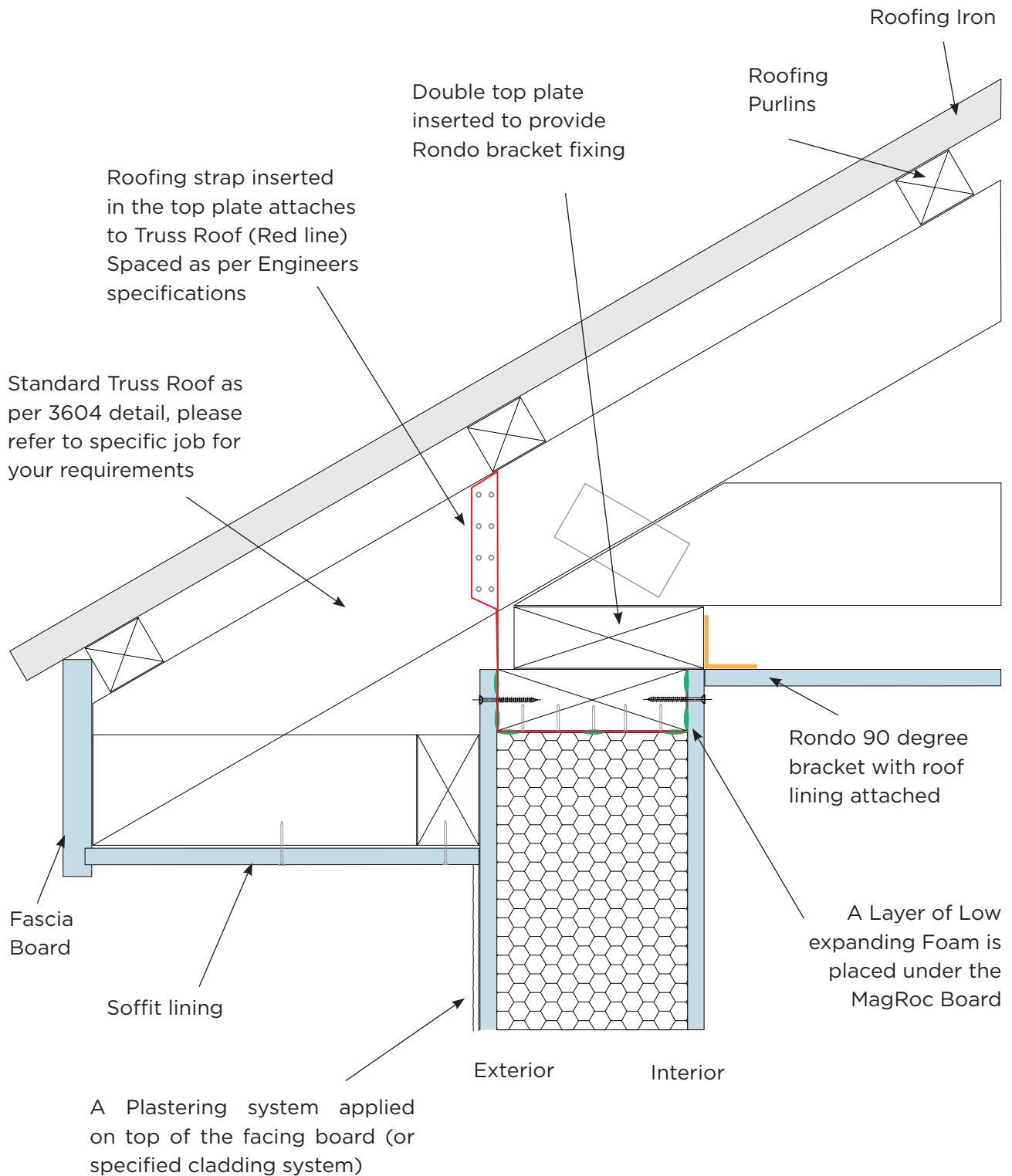




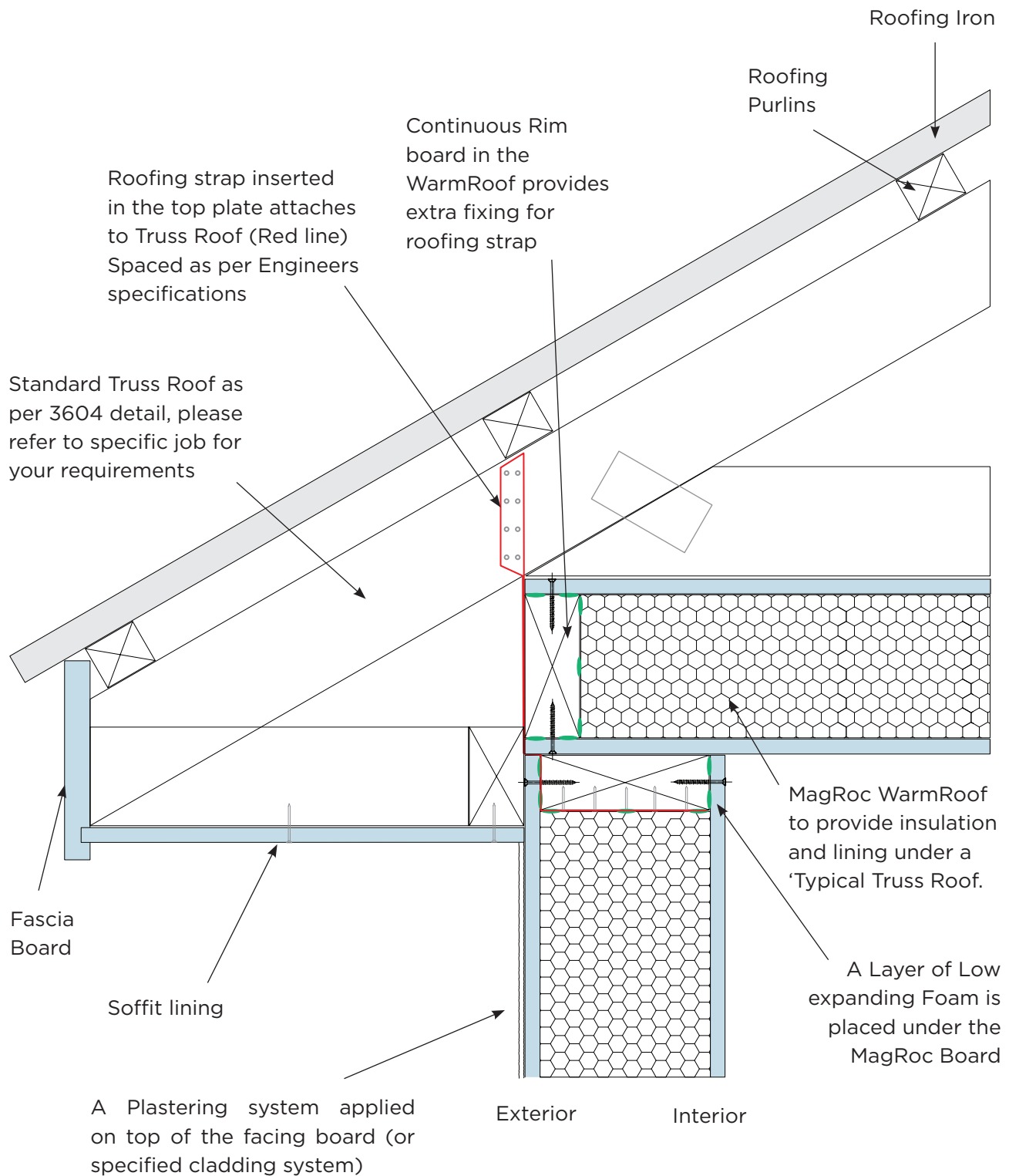
## Figure 37.0 MagRoc 'Typical' MagRoof Square Soffit



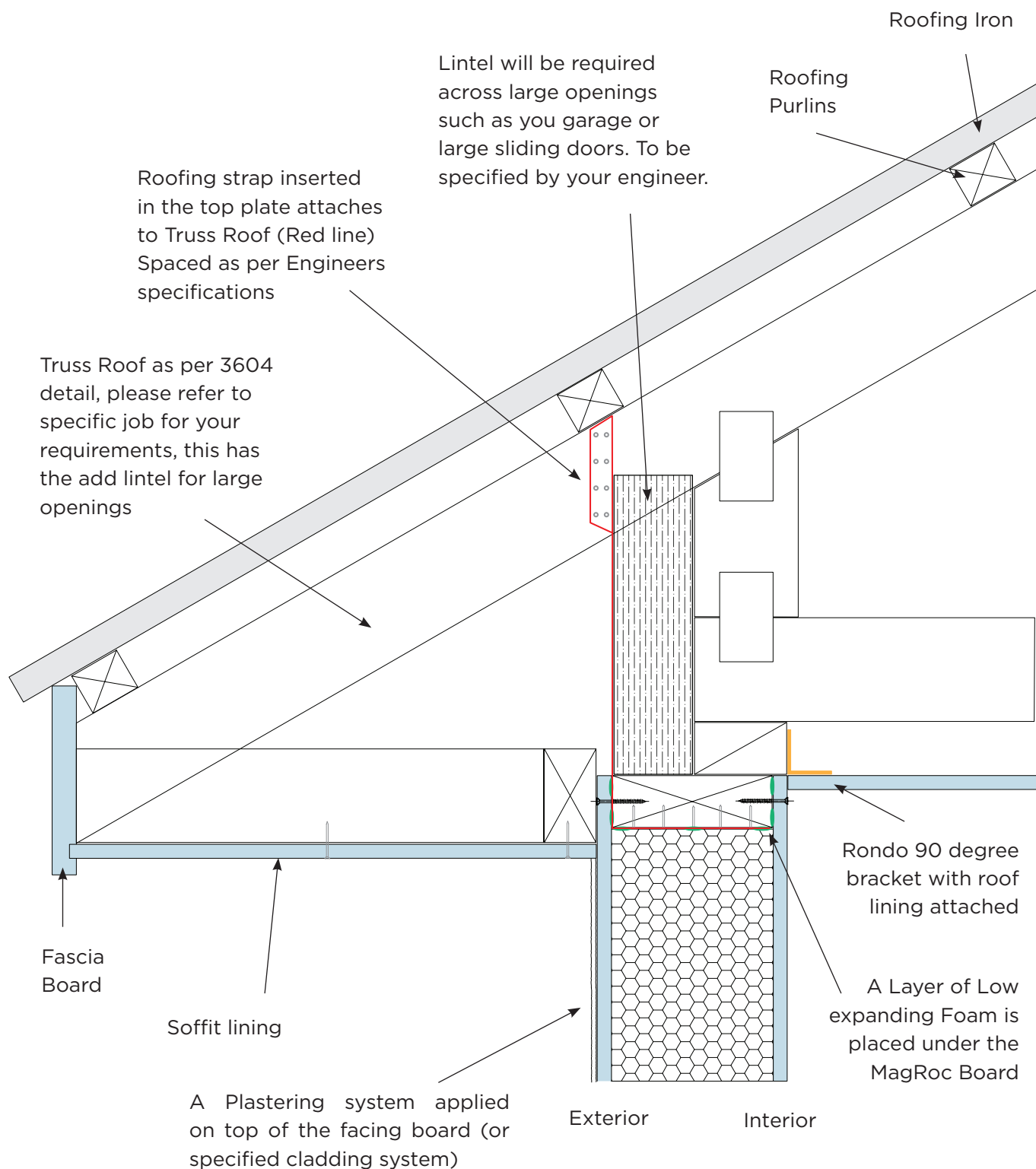
# Figure 38.0 MagRoc 'Typical' Truss Roof Square Soffit



# Figure 39.0 MagRoc 'Typical' WarmRoof with Truss Roof & Square Soffit



# Figure 40.0 MagRoc 'Typical' Truss Roof with Lintel required & Square Soffit



### 10.1.2 MagRoc 'Warmroof' Panels

115mm Warmroof panels are normally placed over a roof structure (truss, beam, or rafter) as an insulated sarking. The strength of the panels eliminates the sagging between rafters and provides an extremely rigid and flat surface for the fixing of virtually any roofing material. Together, SIP walls and Warmroof panels provide an effectively airtight home. The nominal 115mm panel will achieve a thermal rating of R3. The 115mm panel thickness works well with 90 x 45 timber trimmers for openings. Services are run in the conventional manner in the roof space.

## 10.2 Floors

A MagRoc Panel floor system is ideal for those who wish to have a solid, quiet and warm floor system. The thickness of the floor panel will be determined by the required insulation level or the span of the panels and incorporated structural member. There are two methods of constructing a SIP panel floor:

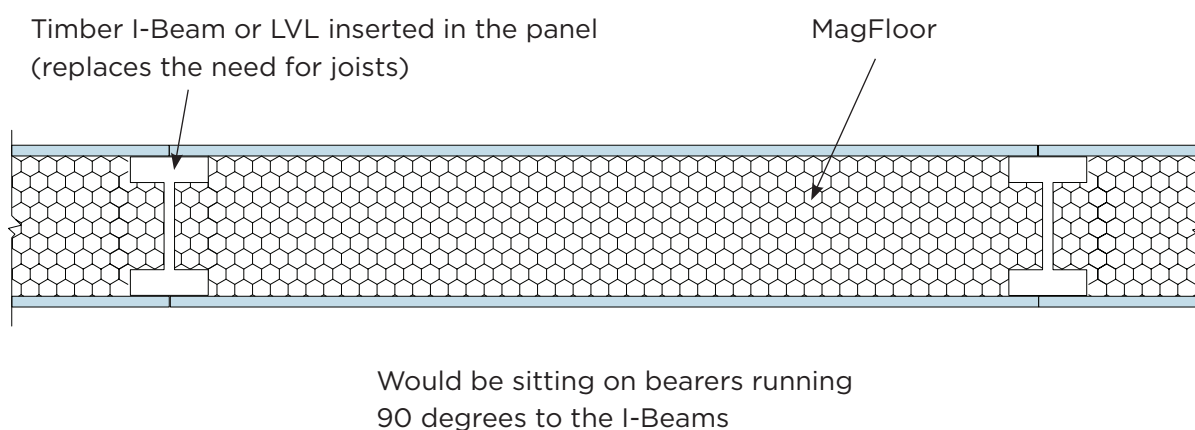
### 10.2.1 Structural Floor SIP's (MagFloor)

Just as with 'Warmroof' these floor panels are fixed directly over floor joists. Refer to the engineers tables, but the joists spacing can often be increased when using a thicker floor panel.

The MagRoc skins of the panels are waterproof (if joints sealed to the approved spec) and any floor finish can be fixed to the surface, including carpet, vinyl, tiles, and timber floor veneers etc.

Because the panels are fixed over joists, services can be run in the joists space as in conventional construction. As a ground floor over an open pile foundation, the high thermal insulation eliminates the need for conventional secondary insulation, which is historically difficult to install and maintain.

By using a 70mm thick panel in wet areas, a plaster screed can be added to create required fall to wastes.



**Figure 41.0 MagRoc 'Typical' MagFloor Connection**

### 10.2.2 MagRoc WarmFloor (Non Structural floor panels)

Just as with 'warmroof' these floor panels are fixed directly over floor joists. Refer to the engineering tables, but generally the joist spacing can be greatly increased when using a 100mm, or more, floor panel. Panel floors produce a very solid feeling floor surface and are extremely thermally efficient. The MagRoc skins of the panels are waterproof and any floor finish can be fixed to the surface, including carpet, vinyl, tiles and timber floor veneers etc.

Because the panels are fixed over the joists, services can be run in the joist space like conventional construction. As a ground floor over an open pile foundation, the high thermal insulation eliminates the need for conventional secondary insulation, which is historically difficult to install and maintain.

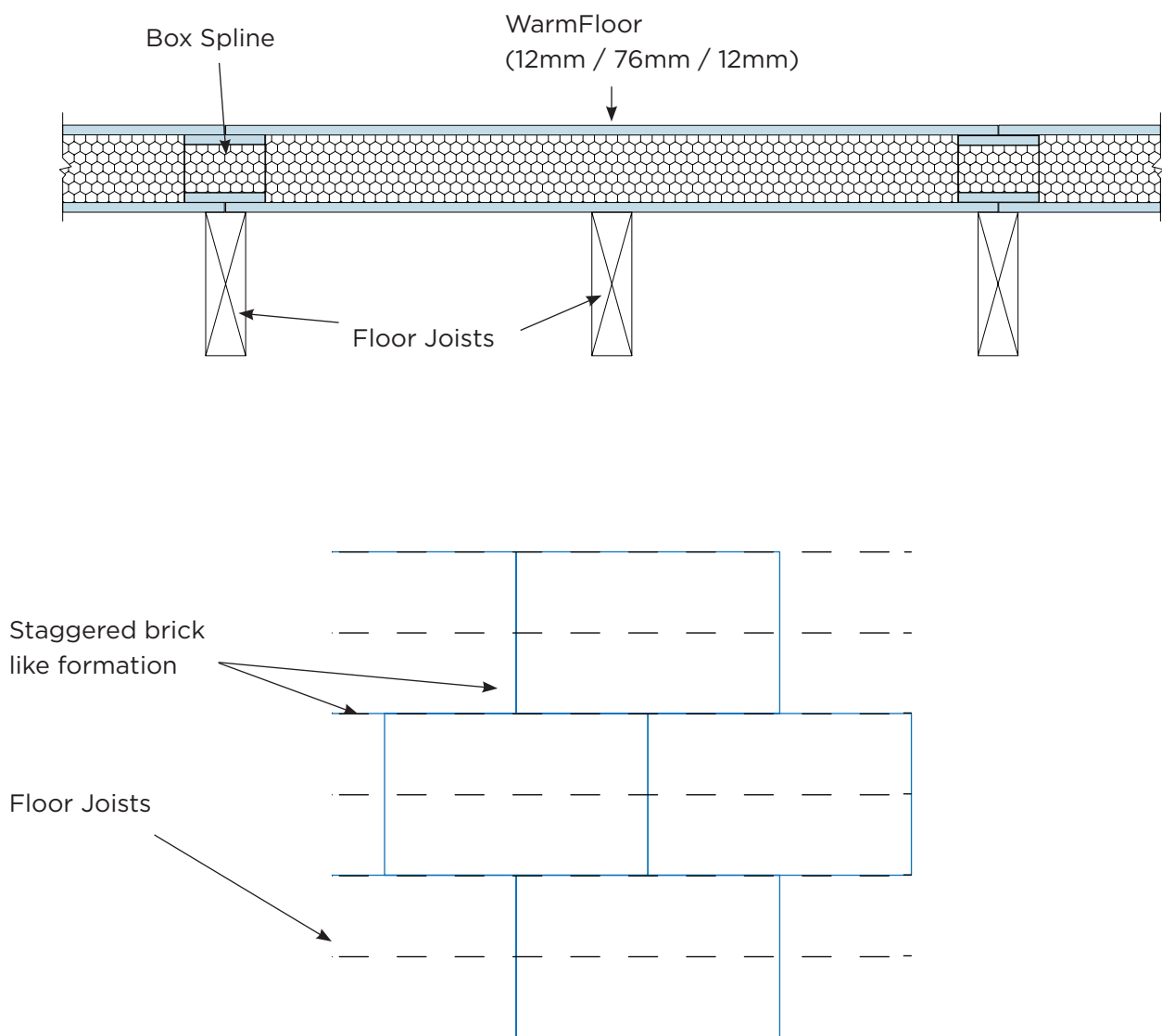


Figure 42.0 MagRoc 'Typical' WarmFloor Connection

## 11.0 Exterior Finish & Claddings

A MagRoc SIP house will look no different from any conventionally built house. External wall finishes are limited only by your imagination. Any existing cladding system can be applied to SIP's. MagRoc SIP's, unlike OSB SIP's, are inherently water resistant and cladding is mostly a matter of aesthetics.

**NOTE: A more extensive Exterior and Interior Finishing Manual is currently being developed, please contact MagRoc for the most up to date information on paint and cladding specifications.**

### 11.1 Paint and Batten finish (aka Board and Batten)

For the most economical finish, SIP's can be simply painted to give the classic Board and Batten appearance. Joints should be sealed by placing a 12 - 18mm MagRoc batten (or timber) with MS Sealant / Flashing tape placed on the joint behind the batten. MS Sealant should be placed along the top and sides of the batten to stop any water ingress behind the batten.



Care must be taken when sealing or taping horizontal joints. Obviously, any water allowed to enter a horizontal position is less likely to run out. Refer to Section 4.4 for sealants.

Refer to Appendix B for the approved Dulux or Resene paint systems. But as noted above there is a comprehensive finishings manual being developed right now so please contact MagRoc before specifying your paint finish.

### 11.2 Texture Coating / Plaster Finish

SIP's panels are a suitable substrate for approved texture coating systems, which can be applied directly to the MagRoc surface. Either tapered or square edged panels can be used and will have the joints flushed up with the proprietary coating joint treatment.

Spline and jointing screws will be set just below the surface of the board for flush finishing. Refer to Appendix C for the technical specification of the approved texture coating, namely; Rockcote and Dulux Acratex. We have also conducted testing with STO, Mason's Plaster, and Granisite coatings.



## 11.3 Cladding Over Cavity

Any conventional cavity based cladding system can be applied over MagRoc SIP's and cavity battens can be directly screwed to the SIP face. Remember the SIP is water resistant in it's own right but we recommend you treat the SIP joints with a specified MS Sealant or Flashing tape.

We do not recommend nailing the cavity battens on, the density of the Magroc board cause it to shatter from gas driven nails; screw fix only.

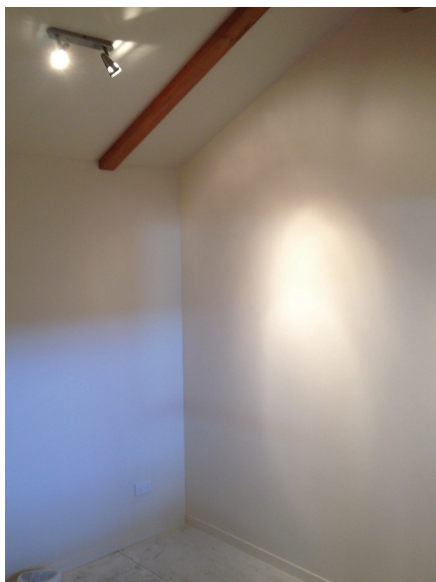
## 12.0 Internal Finishing

A MagRoc™ SIP home does not require plaster board internal linings, or for that matter, any other type of internal lining, other than the internal surface of the SIP.

**NOTE: A more extensive Exterior and Interior Finishing Manual is currently being developed, please contact MagRoc for the most up to date information on interior plastering and paint specifications.**

The plastered internal finish is suitable for any final finishing treatment, whether paint, wallpaper, tile, textured finish, fabric or specific finish of your choice.

All panels are available with tapered edges for stopping. The surface of MagRoc™ SIPs is extremely impact resistant and is ideal for fixing joinery, pictures or other decorations directly to.





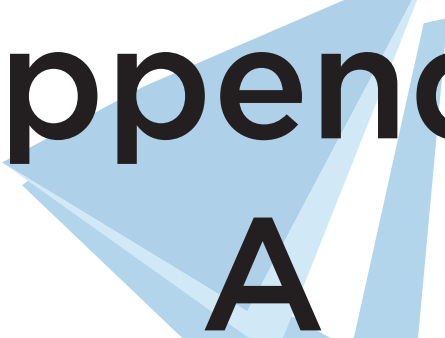
## 13.0 Disposal

Due to the nature of MagRoc SIP detailing and manufacture, onsite waste is dramatically reduced and should produce only small amounts of waste which can be either recycled or disposed of in landfills

MagRoc™ board is an inert, non-metallic oxide and presents no deleterious effect to the environment when disposed of in normal ways. MagRoc can be safely disposed of in landfills.

Polystyrene (EPS) is non biodegradable and non chemically polluting and can therefore be safely disposed of in landfills. It can also be recycled, with more and more facilities becoming available in New Zealand.

Recovered EPS can be processed into a substitute for virgin polymer. When recovered EPS is melted, it reverts to the solid polystyrene form and shrinks to its original volume. Once solidified, it can be reground into solid granules and used in the production of simple polystyrene products, such as coat hangers. Recovered material is also suitable for mixing with other polymers in extruded applications such as “plastic lumber”. Ground EPS can also be mixed with cement to make a lightweight concrete material for insulating swimming pools and floors.

An abstract graphic consisting of several overlapping, semi-transparent blue triangles of various sizes, creating a layered, geometric effect. The triangles are oriented in different directions, with some pointing upwards and others downwards.

# Appendix A

# Pricing Request



To expedite the pricing of your plans please complete the request form below

Date:	
Company name:	
Representative name:	
Contact details:	
Site address (for delivery):	

Do you require an Estimate or Quotation

(Please circle)

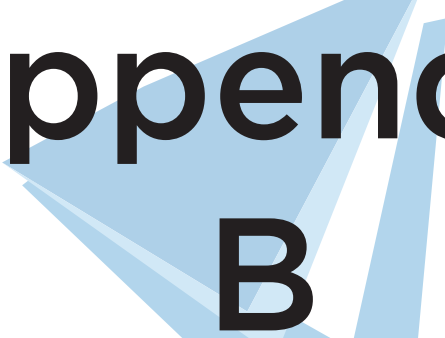
E	Q
---	---

NB, an estimate is normally provided within 7 days. Quotations normally take longer

Items to price:	Unless otherwise stated, prices include MagRoc spline, Adhesive sealant and screws		Y	N
	MagRoc drafted shop drawings (refer Tech manual 1.3)			
	External MagRoc SIP walls			
	Internal MagRoc SIP walls			
	100mm MagRoc Warmfloor			
	100mm MagRoc Warmroof			
	Structural MagRoc roof SIPs			
	MagFence			
	MagRoc Insulfound			
	MagRoc MagClad			
	Timber plates, opening trimmers and corner studs	LVL		
		MSG8		
	Preformed rebated window sill and blockings			
	Detailed timber splines, point loads			
	Detailed LVL, Timber or I Beam floor joists			
	Detailed LVL, Timber or I Beam rafters			
	Delivery by Hiab truck			
	Other			

Comments:	

Signed:	
---------	--



# **Appendix B**

## Appendix 2

Approved components for use with MagRoc™ NZ Ltd Structural Insulated Panel System. (SIP's)  
Refer to Appendix in Technical Manual for Data Sheets for these components.

### 1 Sealants and Adhesives

- Penosil Gold – Low expansion polyurethane foam
- <http://www.acis.co.nz/docs/1/techdocs/TDS%20Penosil%20Gold%20Gun%20Low%20Expansion.pdf>
- 
- Penosil Premium foam cleaner
- <http://www.acis.co.nz/product.php?id=3>
- 
- Sika Nailbond Premium adhesive
- <http://nz01.webdms.sika.com/files/show.do?documentID=96>
- 
- Sika MS sealant <http://nz01.webdms.sika.com/files/show.do?documentID=161>
- 

### 2 Building Wraps and Tapes

- Proclima Solitex Extasana
- <http://www.proclima.co.nz/solitex-extasana>
- 
- Proclima Tescon Extora
- <http://www.proclima.co.nz/tescon-extora-weather-tightness>
- 
- Proclima Solitex Mento Plus
- <http://www.proclima.co.nz/solitex-mento-weather-tight>
- 
- Proclima Tescon Naidec
- <http://www.proclima.co.nz/tescon-naidec-weather-tightness>

### 3 Direct Fix Plaster Systems and Plaster Systems on cavity

- Rockcote;

#### Acrylic Specification

Slurry Coat over the MagRoc

- 1 Coat of Q-Render with Reinforcing Mesh
- 1 Coat of Q-Render Levelling Coat
- 1 Coat of Render Prime Sealer
- 1 Coat of Acrylic Texture
- 1 Coat of Rockcote Armour

#### Mineral Specification

Slurry Coat over the MagRoc

- 1 Coat of Q-Render with Reinforcing Mesh
- 1 Coat of Q-Render Levelling Coat
- 1 Coat of Mineral Texture
- 1 Coat of Limelock
- 2 Coats of Resene X200

- Dulux Acratex
- Primer: Acratex Acraprime 501/2 SB <http://www.duluxacratex.co.nz/assets/pdf/>

datasheets/NZDA0983.pdf

- 1st coat: Acratex Fastcoat 500/13

<http://www.duluxacratex.co.nz/assets/pdf/datasheets/NZDA1036.pdf>

2nd coat: Acratex Tuscany Course Trowel On

<http://www.duluxacratex.co.nz/assets/pdf/datasheets/NZDA1345.pdf>

3rd coat: Acratex Acrashield 955 Acrylic Topcoat

<http://www.duluxacratex.co.nz/assets/pdf/datasheets/NZDA0978.pdf>

4th coat: Acratex Acrashield 955 Acrylic Top Coat

<http://www.duluxacratex.co.nz/assets/pdf/datasheets/NZDA0978.pdf>

#### 4 Primer Sealers

- Resene Sureseal
- Dulux TotalPrep Primer Sealer
- Acratex Acraprime 501/2 SB <http://www.duluxacratex.co.nz/assets/pdf/datasheets/NZDA0983.pdf>

#### 5 Direct applied Exterior coating systems

- Dulux

Surface Prep

Primer: Dulux TotalPrep Primer Sealer @ 14.1m<sup>2</sup>/L

1st Coat: Weathershield X101 LS @ 16.1m<sup>2</sup>/L <http://www.dulux.co.nz/products/dulux-exterior-products/walls/product-detail?product=14775>

2nd Coat: Weathershield X101 LS @ 16.1m<sup>2</sup>/L <http://www.dulux.co.nz/products/dulux-exterior-products/walls/product-detail?product=14775>

Note: Weathershield X10 can be substituted for High Build Acrylic Topcoat options (Acratex Acrashield 955 @ 6.7m<sup>2</sup>/L or Acratex Elastomeric 201 @ 4.0m<sup>2</sup>/L)

#### 6 Direct Applied Interior Paint systems

Surface Prep

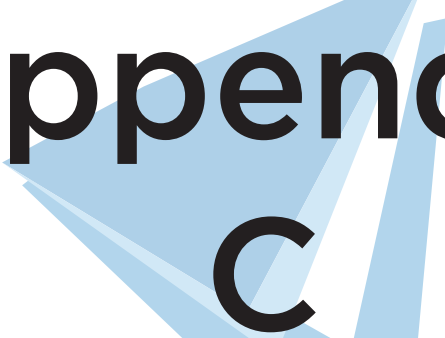
Primer: Dulux TotalPrep PrimerSealer @ 14.1m<sup>2</sup>/L

1st Coat: Dulux Wash & Wear 101 LS @ 16.0m<sup>2</sup>/L

2nd Coat: Dulux Wash & Wear 101 LS @ 16.0m<sup>2</sup>/L

Note: Dulux Wash & Wear 101 can be substituted for Dulux Enviro2 LS @ 16.0m<sup>2</sup>/L.

For ceilings & wet/service areas, alternative specifications are required - please contact.

A blue geometric graphic consisting of several overlapping triangles and polygons, creating a dynamic, abstract shape. It is positioned behind the text 'Appendix C'.

# Appendix

## C

# Rockcote MagRoc Wall System Specification

## 1. General

### 1.1 Rockcote Render System Information

Substrate : MagRoc Wall System - MagRoc Wall System  
Coating System : Standard Render (6-8mm Meshed)  
Finish : Rockcote Acrylic Based Texture - Classico Swirl  
Paint System : 2 Coats of Resene X200 or Rockcote Armour

### 1.2. Description

## 2. Building Code Compliance

If the project has a building consent then the following clauses apply.

### 2.1. Durability

The work covered by this part of the specification has been designed and constructed to achieve a minimum durability of 15 years.

### 2.2. On Going Maintenance Instructions

Provide ongoing maintenance instructions required to meet the performance requirements of the NZBC B2 Durability.

### 2.3. Substrate

The substrate for this Rockcote RenderSpec™ has had all the appropriate inspections carried out by a BCA representative and that it complies with the NZBC requirements. If the substrate is existing, all tests and checks have been carried out by a BCA representative or Independent assessor and that the substrate is found to be sound and stable.

## 3. Documents

### 3.1. Abbreviations

The following abbreviations are used throughout this work section:

- PPCS Proprietary Plaster Cladding System
- LRV Light Reflectance Value
- MSDS Material safety data sheet(s)
- BCA Building Control Authority
- NZBC New Zealand Building Code
- NZS New Zealand Standards
- AS/NZ Australia New Zealand Standard
- WANZ Windows Association of New Zealand
- ICF Insulated Concrete Formwork

### 3.2. Documents Referred to

- NZBC B2 Durability
- NZBC E2/AS1 External moisture
- NZBC E3/AS1 Internal moisture, 1.0 Prevention of fungal growth
- BRANZ Bulletin 353 Ground clearances
- BRANZ Bulletin 418 Weathertightness do's and don'ts
- BRANZ Bulletin 439 Condensation risk in walls
- WANZ WIS

### 3.3. Manufacturers Documents

- Rockcote Technical Resources
- Rockcote Systems Project Guide
- Resene: Total Colour System
- Rockcote TradeSpec
- MagRoc Technical Manual

Copies of the above literature are available at;

Rockcote Systems  
Web: [www.rockcote.co.nz](http://www.rockcote.co.nz)  
Telephone: 0800 50 70 40



Resene Paints  
Web: [www.resene.co.nz](http://www.resene.co.nz)  
Telephone: 0800 RESENE (0800 737 363)

### 3.4. No Substitutions

Substitutions are not permitted to any specified Rockcote Systems wall cladding system. Materials and execution to Rockcote Systems specification except where varied by this specification and supported by architectural detailing.

### 3.5. Qualifications

Use only LBP registered plasterers licensed to apply the Rockcote Systems exterior render systems.

## 4. Documentation

### 4.1. Finish Sample

Submit one 300 mm x 300 mm sample of the selected texture finish and colour for approval. Obtain signature of acceptance on sample and return to the Registered Plasterer.

### 4.2. Maintenance Instructions

Provide Rockcote Systems Maintenance Guide on or before practical completion of the contract for issuing to the building owner. Rockcote Systems Maintenance Guide to be provided on request.

### 4.3. Producer Statement

If the project has a building consent then a producer statement shall be compiled by the Registered Plasterer in the form as required by the BCA.

### 4.4. Health and Safety

Refer to the requirements of the Health and Safety in Employment Act and OSH: Guidelines for the provision of facilities and general safety in the construction industry. Supply protective clothing and equipment. Inform employees and others on site of the hazards and put into place procedures for dealing with emergencies. Obtain from Rockcote Systems the MSDS for each product. Keep sheets on site and comply with the required safety procedures.

### 4.5. Warranty

Warrant this system under normal environmental and use conditions against failure. Rockcote Systems system warranty.

Materials: 15 years by Rockcote Systems - Materials

Execution: 5 years by Registered Plasterer - Workmanship

### 4.6. OnSite Assistance

Allow to inspect the whole of the work at each stage. Determine a programme for onsite assistance including notification when each part and stage of the work is ready for inspection prior to the work commencing. Permit representatives of Rockcote Systems to inspect the work in progress and to take samples of their products from site if requested refer Rockcote Systems Project Guide.

## 5. Components

### 5.1 Reinforcing Mesh

- Rockcote brand - alkali resistant - red (160gsm), weave (mesh) size 5 mm x 4 mm
- Rockcote brand - alkali resistant - blue (170gsm), weave (mesh) size 8 mm x 9 mm
- Rockcote Sticky Mesh - Soft Mesh 150mm Wide

### 5.2 Rockcote PM100 Quick Render

- Polymer-modified cement-based dry plaster mix. Supplied in 20 kg bags

### 5.3 Rockcote Render Prime or Resene Limelock

- Rockcote Render Prime - Water based acrylic polymer dispersion tinted (optional) to the colour of Rockcote finishing coats. Supplied in 15 litre pails.
- Resene Limelock - Water based acrylic polymer dispersion. Supplied in 10 litre pails.

### 5.4 Rockcote Acrylic Texture

- 100% acrylic, high-build texture coating. Supplied in 15 Litre pails

### 5.5 Resene X200

- Resene X200 - Acrylic reinforced waterproof membrane. Supplied in 4 and 10 litre pails. Tinted to the selected colour.

## 5.6 Rockcote Armour

- Rockcote Armour - Acrylic-based protective finish. Supplied in 4 and 15 litre pails. Tinted to the selected colour.

## 5.7 PVC Flashings and Accessories

- Rockcote Standard Corner Flashing
- Protecto EIFS Flashing Tape
- Rockcote Brick/Block Starter Strip

## 5.8 Sealant

- Bostik SafeSeal or equivalent BRANZ Appraised Sealant
- Sealant must comply with WANZ requirements for adhesion to powder coated aluminium

## 5.9 UPVC Flashing Primer

- Rockcote MultiStop Bedding Compound mixed with diluted acrylbond resin. MultiStop Bedding Compound supplied in 15 kg bags.

# 6. Installation

## 6.1. General

- Design Information - Refer to Rockcote TradeSpec™ document 1.2

## 6.2. Substrates

- Check and Prepare Magnesium Board Substrates - Refer to Rockcote TradeSpec™ document 2.21
- Rockcote Slurry coat application - Refer to Rockcote TradeSpec™ document 4.13

## 6.3. Flashings & Accessories

- Rockcote Flashings - Refer to Rockcote TradeSpec™ document 3.1
- Builder Supplied Flashings - Refer to Rockcote TradeSpec™ document 3.2
- Sealants - Refer to Rockcote TradeSpec™ document 3.4
- Adhesives- Refer to Rockcote TradeSpec™ document 3.5
- Expanding Foams - Refer to Rockcote TradeSpec™ document 3.6
- Butyl Based Flashing Tapes - Refer to Rockcote TradeSpec™ document 3.9
- Polystyrene feature moulding installation - Refer to Rockcote TradeSpec™ document 3.10 (optional)

## 6.4. Coating

- General Render Information - Refer to Rockcote TradeSpec™ document 4.1
- Base Coat - Refer to Rockcote TradeSpec™ document 4.2
- Mesh Installation - Refer to Rockcote TradeSpec™ document 4.3
- Levelling Coat - Refer to Rockcote TradeSpec™ document 4.4

## 6.5. Sealing & Finishing

- General Finish Coat Information- Refer to Rockcote TradeSpec™ document 5.1
- Sealer Application - Refer to Rockcote TradeSpec™ document 5.3
- Acrylic Texture Application - Refer to Rockcote TradeSpec™ document 5.5
- 2 x coats Resene X200 Application - Refer to Rockcote TradeSpec™ 5.8
- Rockcote Armour Application - Refer to Rockcote TradeSpec™ document 5.7
- Cleaning Up - Refer to Rockcote TradeSpec™ document 5.10

# 7. Cleaning

Remove debris, unused materials and elements from the site relating to the plaster system application. Replace damaged, cracked or marked elements. Leave the whole of this work to the required standard.

# 8. Final Onsite Assistance

Final Onsite Assistance by Rockcote Systems Registered plasterer and Rockcote project assessor of the entire finished cladding to take place immediately after completion of the wall cladding work and any defects or subsequent damage made good immediately.

Important:

This specification must be read in conjunction with the Rockcote Systems technical drawings.

# Rockcote MagRoc Wall System Specification

## 1. General

### 1.1 Rockcote Render System Information

Substrate : MagRoc Wall System - MagRoc Wall System  
Coating System : Standard Render (6-8mm Meshed)  
Finish : Rockcote Mineral Based Texture - Fast Float Tasman  
Paint System : 2 Coats of Resene X200

### 1.2. Description

## 2. Building Code Compliance

If the project has a building consent then the following clauses apply.

### 2.1. Durability

The work covered by this part of the specification has been designed and constructed to achieve a minimum durability of 15 years.

### 2.2. On Going Maintenance Instructions

Provide ongoing maintenance instructions required to meet the performance requirements of the NZBC B2 Durability.

### 2.3. Substrate

The substrate for this Rockcote RenderSpec™ has had all the appropriate inspections carried out by a BCA representative and that it complies with the NZBC requirements. If the substrate is existing, all tests and checks have been carried out by a BCA representative or Independent assessor and that the substrate is found to be sound and stable.

## 3. Documents

### 3.1. Abbreviations

The following abbreviations are used throughout this work section:

- PPCS Proprietary Plaster Cladding System
- LRV Light Reflectance Value
- MSDS Material safety data sheet(s)
- BCA Building Control Authority
- NZBC New Zealand Building Code
- NZS New Zealand Standards
- AS/NZ Australia New Zealand Standard
- WANZ Windows Association of New Zealand
- ICF Insulated Concrete Formwork

### 3.2. Documents Referred to

- NZBC B2 Durability
- NZBC E2/AS1 External moisture
- NZBC E3/AS1 Internal moisture, 1.0 Prevention of fungal growth
- BRANZ Bulletin 353 Ground clearances
- BRANZ Bulletin 418 Weathertightness do's and don'ts
- BRANZ Bulletin 439 Condensation risk in walls
- WANZ WIS

### 3.3. Manufacturers Documents

- Rockcote Technical Resources
- Rockcote Systems Project Guide
- Resene: Total Colour System
- Rockcote TradeSpec
- MagRoc Technical Manual

Copies of the above literature are available at;

Rockcote Systems  
Web: [www.rockcote.co.nz](http://www.rockcote.co.nz)  
Telephone: 0800 50 70 40

Resene Paints  
Web: [www.resene.co.nz](http://www.resene.co.nz)  
Telephone: 0800 RESENE (0800 737 363)

### 3.4. No Substitutions

Substitutions are not permitted to any specified Rockcote Systems wall cladding system. Materials and execution to Rockcote Systems specification except where varied by this specification and supported by architectural detailing.

### 3.5. Qualifications

Use only LBP registered plasterers licensed to apply the Rockcote Systems exterior render systems.

## 4. Documentation

### 4.1. Finish Sample

Submit one 300 mm x 300 mm sample of the selected texture finish and colour for approval. Obtain signature of acceptance on sample and return to the Registered Plasterer.

### 4.2. Maintenance Instructions

Provide Rockcote Systems Maintenance Guide on or before practical completion of the contract for issuing to the building owner. Rockcote Systems Maintenance Guide to be provided on request.

### 4.3. Producer Statement

If the project has a building consent then a producer statement shall be compiled by the Registered Plasterer in the form as required by the BCA.

### 4.4. Health and Safety

Refer to the requirements of the Health and Safety in Employment Act and OSH:Guidelines for the provision of facilities and general safety in the construction industry. Supply protective clothing and equipment. Inform employees and others on site of the hazards and put into place procedures for dealing with emergencies. Obtain from Rockcote Systems the MSDS for each product. Keep sheets on site and comply with the required safety procedures.

### 4.5. Warranty

Warrant this system under normal environmental and use conditions against failure. Rockcote Systems system warranty.

Materials: 15 years by Rockcote Systems - Materials

Execution: 5 years by Registered Plasterer - Workmanship

### 4.6. OnSite Assistance

Allow to inspect the whole of the work at each stage. Determine a programme for onsite assistance including notification when each part and stage of the work is ready for inspection prior to the work commencing. Permit representatives of Rockcote Systems to inspect the work in progress and to take samples of their products from site if requested refer Rockcote Systems Project Guide.

## 5. Components

### 5.1 Reinforcing Mesh

- Rockcote brand - alkali resistant - red (160gsm), weave (mesh) size 5 mm x 4 mm
- Rockcote brand - alkali resistant - blue (170gsm), weave (mesh) size 8 mm x 9 mm
- Rockcote Sticky Mesh - Soft Mesh 150mm Wide

### 5.2 Rockcote PM100 Quick Render

- Polymer-modified cement-based dry plaster mix. Supplied in 20 kg bags

### 5.3 Rockcote Mineral Texture

- Polymer-modified cement-based dry plaster mix. Supplied in 20 kg bags

### 5.4 Rockcote Render Prime or Resene Limelock

- Rockcote Render Prime - Water based acrylic polymer dispersion tinted (optional) to the colour of Rockcote finishing coats. Supplied in 15 litre pails.
- Resene Limelock - Water based acrylic polymer dispersion. Supplied in 10 litre pails.

### 5.5 Resene X200

- Resene X200 - Acrylic reinforced waterproof membrane. Supplied in 4 and 10 litre pails. Tinted to the selected colour.

## 5.6 PVC Flashings and Accessories

- Rockcote Standard Corner Flashing
- Protecto EIFS Flashing Tape
- Rockcote Brick/Block Starter Strip

## 5.7 Sealant

- Bostik SafeSeal or equivalent BRANZ Appraised Sealant
- Sealant must comply with WANZ requirements for adhesion to powder coated aluminium

## 5.8 UPVC Flashing Primer

- Rockcote MultiStop Bedding Compound mixed with diluted acrylbond resin. MultiStop Bedding Compound supplied in 15 kg bags.

# 6. Installation

## 6.1. General

- Design Information - Refer to Rockcote TradeSpec™ document 1.2

## 6.2. Substrates

- Check and Prepare Magnesium Board Substrates - Refer to Rockcote TradeSpec™ document 2.21
- Rockcote Slurry coat application - Refer to Rockcote TradeSpec™ document 4.13

## 6.3. Flashings & Accessories

- Rockcote Flashings - Refer to Rockcote TradeSpec™ document 3.1
- Builder Supplied Flashings - Refer to Rockcote TradeSpec™ document 3.2
- Sealants - Refer to Rockcote TradeSpec™ document 3.4
- Adhesives- Refer to Rockcote TradeSpec™ document 3.5
- Expanding Foams - Refer to Rockcote TradeSpec™ document 3.6
- Butyl Based Flashing Tapes - Refer to Rockcote TradeSpec™ document 3.9
- Polystyrene feature moulding installation - Refer to Rockcote TradeSpec™ document 3.10 (optional)

## 6.4. Coating

- General Render Information - Refer to Rockcote TradeSpec™ document 4.1
- Base Coat - Refer to Rockcote TradeSpec™ document 4.2
- Mesh Installation - Refer to Rockcote TradeSpec™ document 4.3
- Levelling Coat - Refer to Rockcote TradeSpec™ document 4.4

## 6.5. Sealing & Finishing

- General Finish Coat Information- Refer to Rockcote TradeSpec™ document 5.1
- Mineral Texture Application - Refer to Rockcote TradeSpec™ document 5.6
- Sealer Application - Refer to Rockcote TradeSpec™ document 5.3
- 2 x coats Resene X200 Application - Refer to Rockcote TradeSpec™ 5.8
- Cleaning Up - Refer to Rockcote TradeSpec™ document 5.10

# 7. Cleaning

Remove debris, unused materials and elements from the site relating to the plaster system application. Replace damaged, cracked or marked elements. Leave the whole of this work to the required standard.

# 8. Final Onsite Assistance

Final Onsite Assistance by Rockcote Systems Registered plasterer and Rockcote project assessor of the entire finished cladding to take place immediately after completion of the wall cladding work and any defects or subsequent damage made good immediately.

Important:

This specification must be read in conjunction with the Rockcote Systems technical drawings.

No alteration to the Rockcote RenderSpec™ is permitted.

This Rockcote RenderSpec™ must be read in conjunction with Rockcote TradeSpec™ documents version 3

## Dulux Professional Total Prep Primer Sealer Undercoat

NZDD1595

<b>Part A</b>	664-89049
<b>Approvals</b>	APAS-0163/2, APAS-0172

### Description

Previously known as DULUX PROFESSIONAL Total Prep  
DULUX PROFESSIONAL Total Prep is a high quality, 100% acrylic primer/sealer/undercoat, with excellent opacity, adhesion, flow and sealing and filling properties. It is suitable for interior and exterior use on a variety of surfaces.

### Features

- Extremely high opacity
- Excellent adhesion
- Recoatable with all systems
- Water based
- Multipurpose

### Benefits






- Obliterates substrate allowing 2 coat system, saves application time.
- Sticks to substrates increasing life of paint system.
- Use under acrylic or oil based topcoats, 1 product does it all.
- Easy clean up, low odour.
- One product primes, seals and undercoats.

### Uses

Use DULUX PROFESSIONAL Total Prep as a water based primer/sealer/undercoat on all interior and exterior brick, masonry, render, concrete, Hardiflex, paper faced wallboard, sound timber, suitably primed Zincalume, galvanised iron, suitably primed metal and previously painted surfaces. This product is also suitable for use under wallpaper. All Dulux Professional water based and oil based topcoats can be used over this product.

### Performance Guide

<b>Weather</b>	Excellent when used as part of approved system.	<b>Heat Resistance</b>	Up to 70C.
<b>Water</b>	Excellent when topcoated with approved topcoat.	<b>Solvent</b>	Sensitive to aromatic hydrocarbons, alcohols and ketones.
<b>Abrasion</b>	Good when topcoated.		

Typical Properties																											
<b>Gloss Level</b>	Flat	<b>Colour</b>	White, may be tinted up to 28ml (1Y) per litre.																								
<b>Components</b>	1	<b>Number Of Coats</b>	1																								
<b>Toxicity</b>	Lead free. Dry film is non-toxic.	<b>V.O.C. Level</b>	< 60g/L untinted																								
<b>Sanding Properties</b>	Excellent	<b>Touch Dry</b>	20 minutes																								
<b>Clean Up</b>	 Water																										
<b>Clean Up Description</b>	Clean all equipment with water.																										
<b>Application Method</b>	 Air Spray  Airless Spray  Brush  Roller																										
<b>Application Conditions</b>	<table> <tr> <td><b>Solids By Volume</b></td><td>41</td><td></td><td></td></tr> <tr> <td></td><td><b>Min</b></td><td><b>Max</b></td><td><b>Recommended</b></td></tr> <tr> <td><b>Wet Film Per Coat (microns)</b></td><td>71</td><td>71</td><td>71</td></tr> <tr> <td><b>Dry Film Per Coat (microns)</b></td><td>29</td><td>29</td><td>29</td></tr> <tr> <td><b>Recoat Time (min)</b></td><td>2 Hours</td><td></td><td></td></tr> <tr> <td><b>Theoretical Spread Rate (m<sup>2</sup>/L)</b></td><td>14.1</td><td>14.1</td><td>14.1</td></tr> </table>			<b>Solids By Volume</b>	41				<b>Min</b>	<b>Max</b>	<b>Recommended</b>	<b>Wet Film Per Coat (microns)</b>	71	71	71	<b>Dry Film Per Coat (microns)</b>	29	29	29	<b>Recoat Time (min)</b>	2 Hours			<b>Theoretical Spread Rate (m<sup>2</sup>/L)</b>	14.1	14.1	14.1
<b>Solids By Volume</b>	41																										
	<b>Min</b>	<b>Max</b>	<b>Recommended</b>																								
<b>Wet Film Per Coat (microns)</b>	71	71	71																								
<b>Dry Film Per Coat (microns)</b>	29	29	29																								
<b>Recoat Time (min)</b>	2 Hours																										
<b>Theoretical Spread Rate (m<sup>2</sup>/L)</b>	14.1	14.1	14.1																								

Application Guide	
<b>Surface Preparation</b>	<ul style="list-style-type: none"> <li>All surfaces must be thoroughly clean and free of all loose dirt, grease, mould, surface chalk and loose or flaking paint. New timber surfaces should be sanded smooth and dusted down prior to priming. Fill nail holes, imperfections and cracks with a suitable filler, sand and dust off.</li> <li>For set plaster or plasterglass use sealer binder as the precoat.</li> </ul>
<b>Application Procedure And Equipment</b>	<ul style="list-style-type: none"> <li>Brush, roller, conventional or airless spray.</li> <li>NOTE: Spray application is not recommended for priming timber surfaces.</li> <li>Stir contents thoroughly before and during use. Apply direct from the can. May be applied to dampened surfaces. If applied over dry, porous surfaces, dampen surface before applying. Brush: Wet brushes with water prior to use to avoid clogging. Apply a full even coat direct from the container. Under hot conditions it may be necessary to thin with up to 50ml per litre of clean water.</li> <li>Roller: Using a medium nap roller apply a full even coat direct from the container and finish by light parallel strokes with a dry roller.</li> <li>Airless/Conventional Spray: Suitable for application by all standard spray equipment. If necessary thin with up to 100ml per litre of water to aid atomisation.</li> </ul>

Health And Safety			
MSDS Number	10987	Health Effects	For detailed information refer to the product label and the current Material Safety Data Sheet available through Customer Service. Splashes to the eye may cause eye irritation. When spraying, inhalation of mists may produce respiratory irritation.
Protective Equipment	Wear eye protection and when spraying wear a dust mask.		
In the case of emergency, please call 0800 734 607			

Precautions And Limitations
All preparation and painting must conform to AS2311: The Painting of Buildings. Do not overspread or exceed 14.0 square metres per litre per coat. In hot weather, rinse brush every half hour or use two and keep one standing in water. Do not apply if temperature is under 10C, or when temperature of surface may fall below 10C during the drying period, otherwise film formation will not be complete and poor properties will result.



Transport And Storage			
<b>Pack A</b>	664-89049	<b>Shipment Name</b>	Not dangerous goods. No special transport requirements.
<b>Size</b> 4 Litre 10 Litre		<b>Weight</b> 5.4 Kg 13.4 Kg	
<b>Flash Point</b>	NA	<b>UN Number</b>	NA
<b>Dangerous Goods Class</b>	NA	<b>Package Group</b>	NA

**Disclaimer**

Dulux and Other marks followed by ® are registered trademarks. Marks followed by the symbol of ™ are trademarks.

The data provided within the Duspec system is correct at the time of publication, however it is the responsibility of those using this information to check that it is current prior to specifying or using any of these coating systems.

DISCLAIMER: Any advice, recommendation, information, assistance or service provided by any of the divisions of DuluxGroup (New Zealand) Pty Ltd or its related entities (collectively, DuluxGroup) in relation to goods manufactured by it or their use and application is given in good faith and is believed by DuluxGroup to be appropriate and reliable. However, any advice, recommendation, information, assistance or service provided by DuluxGroup is provided without liability or responsibility PROVIDED THAT the foregoing shall not exclude, limit, restrict or modify the right entitlements and remedies conferred upon any person or the liabilities imposed upon DuluxGroup by any condition or warranty implied by Commonwealth, State or Territory Act or ordinance void or prohibiting such exclusion limitation or modification. Coating systems can be expected to perform as indicated on the Duspec Spec Sheet so long as applications and application procedures of the individual products are followed as recommended on the appropriate Product data Sheet. "Orica" "Dulux" "Berger" "Berger Gold Label" "Hadrian" "Walpamur" "Levene" "Acratex" and Other marks followed by ® are registered trademarks. Marks followed by the symbol ™ are trademarks.

Please note that this document is only valid for 60 days from the date of issue.

DuluxGroup (New Zealand) Pty Ltd 150 Hutt Park Road NZ ACN 133 404 118

# Notes:

# Notes:



